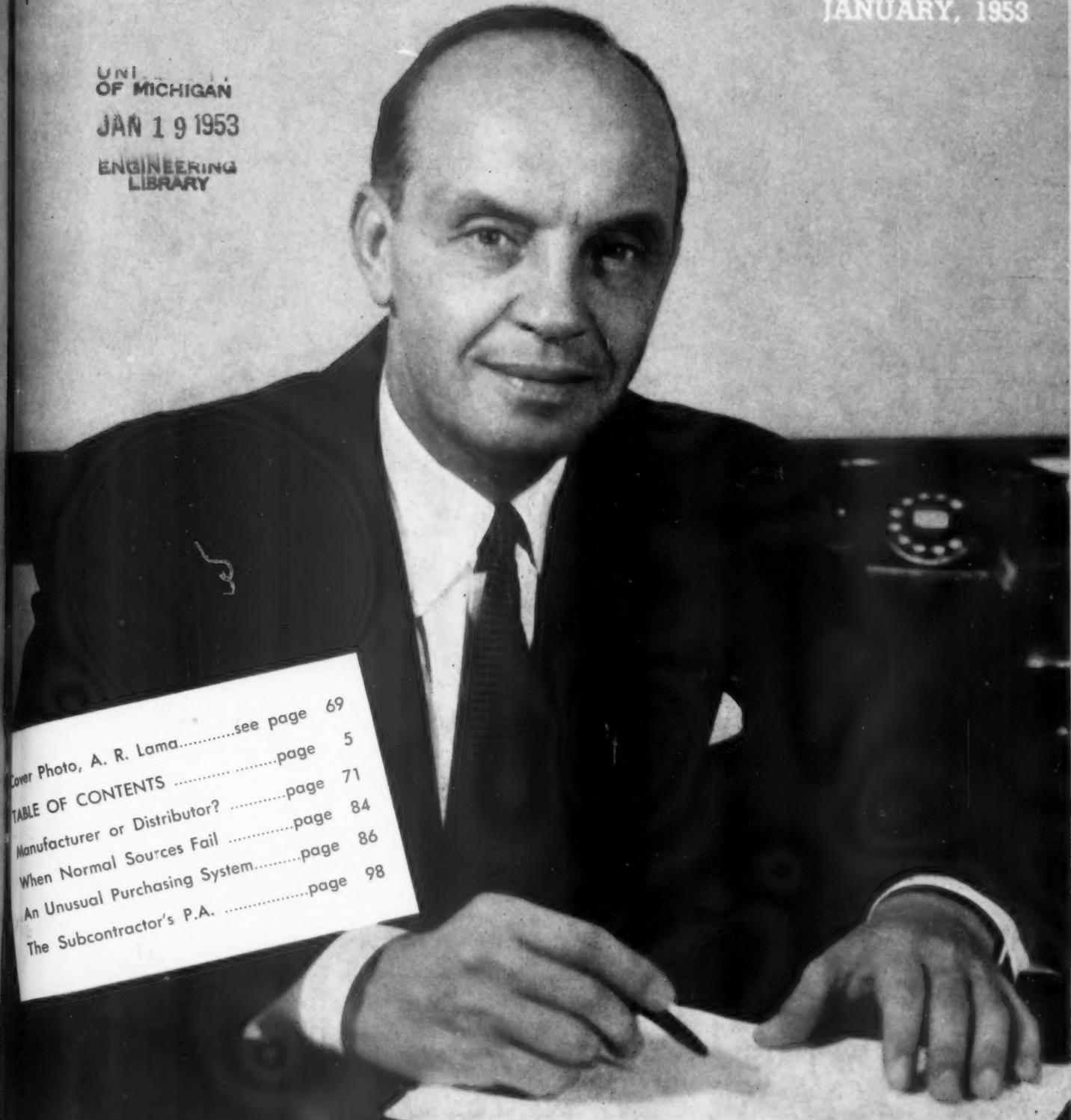


# PURCHASING

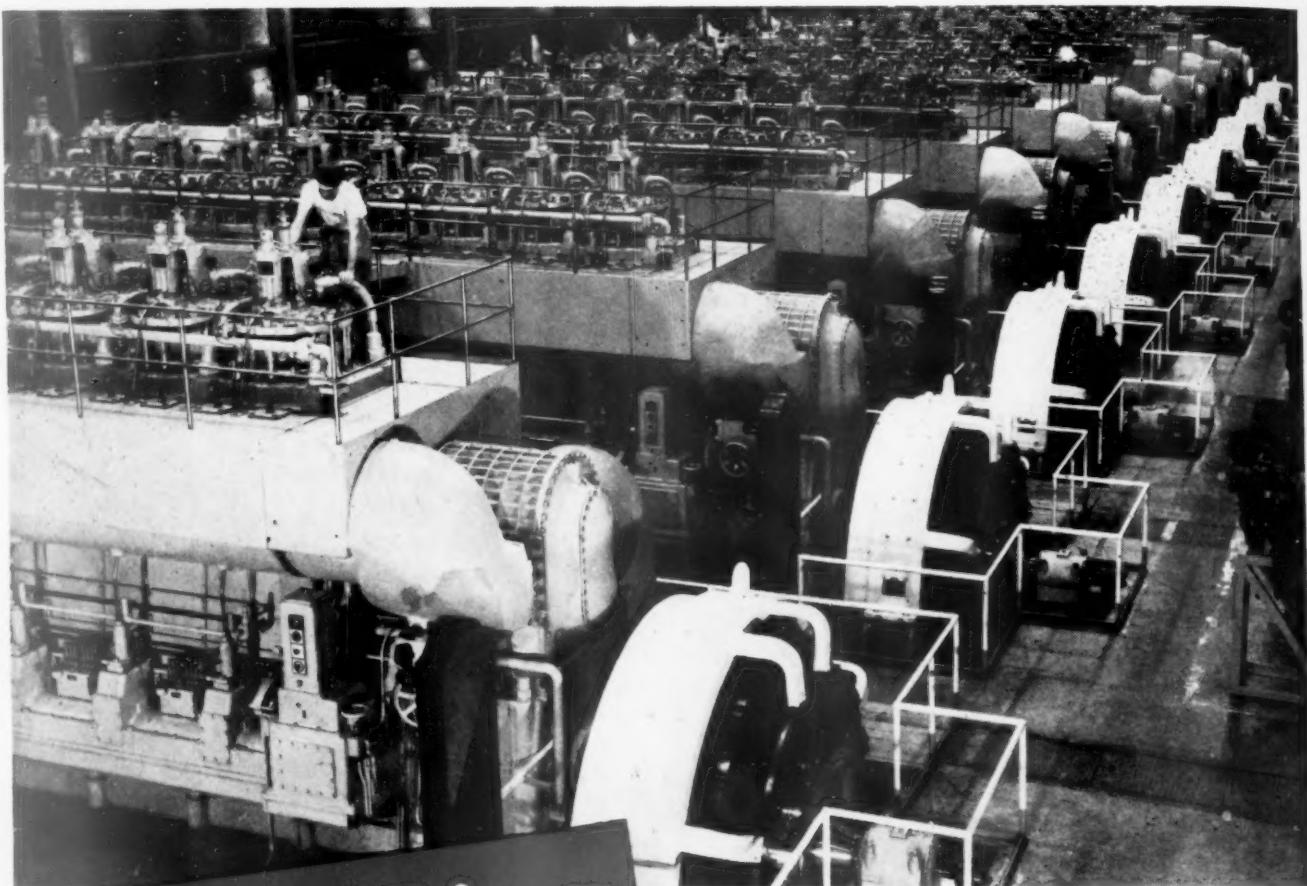
JANUARY, 1953

X  
UNI  
OF MICHIGAN  
JAN 19 1953  
ENGINEERING  
LIBRARY



A CONOVER-MAST PUBLICATION • 50 CENTS

# REYNOLDS METALS



gets top efficiency  
with **TEXACO**

In the Reynolds Metals Company aluminum reduction plant at Jones Mills, Arkansas, eighteen of these giant gas Diesel engines have been lubricated with *Texaco Ursa Oil* for nearly ten years.

Results have been: clean, efficient, full power

operation . . . low maintenance cost . . . and fuel economy.

Wherever used, Texaco Lubricants and Texaco Lubrication Engineering Service play a big part in stepping up production and reducing unit costs.

That is why, throughout the 48 States, Texaco is preferred in so many fields — a few of which are: copper mining, aviation, railroads, Diesel power plants and others.

Why not enjoy the benefits of Texaco in *your* plant? Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write The Texas Company, 135 East 42nd Street, New York 17, N. Y.



**TEXACO** Lubricants, Fuels and  
Lubrication Engineering Service

TUNE IN . . . TEXACO STAR THEATER starring MILTON BERLE, on television Tuesday nights. METROPOLITAN OPERA radio broadcasts Saturday afternoons.

# PURCHASING

*The National Magazine of Industrial Purchasing*

STUART F. HEINRITZ ..... *Editor*

B. P. MAST ..... *Chairman of the Board*  
 HARVEY CONOVER ..... *President and Treasurer*  
 A. M. MORSE, JR. ..... *Vice President and Publisher*  
 A. H. DIX ..... *Vice President, Research*  
 GILBERT B. FERRIS ..... *Secretary*  
 RAY RICHARDS ..... *Assistant Publisher*

#### EDITORIAL STAFF

PAUL V. FARRELL ..... *Associate Editor*  
 A. N. WECKSLER ..... *Washington Editor*  
 L. E. McMAHON ..... *Production Manager*  
 A. M. GRADY ..... *Production Assistant*  
 E. C. ARINK ..... *Art Director*  
 DAVID BURKE ..... *Associate Art Director*

#### ADVERTISING REPRESENTATIVES

ALEX G. GRAAM ..... *New York*  
 RAY RICHARDS ..... *New York*  
 C. R. KINGSLEY ..... *New York*  
 WAYNE W. GEYER ..... *Chicago*  
 HUGH PELOTT ..... *Chicago*  
 KENNETH W. MCKINLEY ..... *Cleveland*  
 FORREST C. PEARSON ..... *Los Angeles*  
 DWIGHT JENNETT ..... *Los Angeles*

#### EDITORIAL AND EXECUTIVE OFFICES

205 East 42nd Street, New York 17, N. Y.

#### BRANCH OFFICES

137 NORTH MICHIGAN AVENUE ..... *Chicago 11, Ill.*  
 1900 EUCLID AVENUE ..... *Cleveland 15, Ohio*  
 5478 WILSHIRE BLVD. .... *Los Angeles 36, Cal.*  
 NATIONAL PRESS BUILDING ..... *Washington, D. C.*

Published monthly by Peevey, Inc.

Subsidiary of

**CONOVER-MAST PUBLICATIONS, INC.**  
 Printed at Orange, Conn.

**CONOVER-MAST PUBLICATIONS**  
**PURCHASING**  
**MILL & FACTORY**  
**AVIATION AGE**  
**CONSTRUCTION EQUIPMENT**  
**LIQUOR STORE**  
**BAR & FOOD**

**CONOVER-MAST PURCHASING DIRECTORY**  
**CONOVER-MAST BOOK DIVISION**

PURCHASING is an independent journal, not the official organ of any association. Established 1915 as "The Purchasing Agent". Consolidated with "The Executive Purchaser".

Contents are indexed monthly and annually by the Engineering Index Service.

Subscription rates: United States, U. S. Possessions, and Canada: \$4 per year; elsewhere, \$10 per year. Single copies, 50¢.



JANUARY, 1953

VOL. 34, No. 1

JANUARY, 1953

Real Savings .....	65
Watch the Warning Signals .....	A. R. Lama 69
George E. Henry, 1894-1952 .....	70
Manufacturer or Distributor? .....	Frank Curran 71
Price Tags .....	F. G. Space 73
<b>PURCHASING Reports on Purchasing Opinion</b>	
Is There a Workable Basis for Price and Wage Controls? .....	75
Purchasing Management—Whither Bound? .....	S. E. Bryan 77
How Many Lives Has A Factory Tool? .....	80
When Goods Are Lost in Transit .....	A. W. Gray 82
When Normal Supply Sources Fail .....	Maurice Basescu 84
A Purchasing System for 81,500 Active Stock Items .....	G. A. Fay 86
Every Cost Is Too High .....	J. M. Berry 91
Select the Right Wire Rope Fitting .....	W. C. Richards 93
How Powder Metal Is Made .....	Saul Bradbury 96
The Subcontractor's P.A. .....	George Hemerlein 98
Where We Stand Commodity and Business Trends .....	101
Watch That Maintenance Budget .....	G. E. Henry 109
Controversial Questions Concerning Cash Discounts .....	A. C. Shepherd 113
Was That Letter Mailed? .....	Leslie Childs 114
Plugging the Leaks in Operating Expenses .....	David Markstein 116
Damages for Breach of Warranty .....	Leo T. Parker 118
Real Cost of a Company Owned Printing Plant .....	John Paine 176

#### MONTHLY FEATURES

Purchasing Previews .....	13
Late Trade Bulletins and Catalogs .....	19
F. O. B. .....	28
Highlights .....	67
New Products—Ideas .....	128
Office Equipment and Supplies .....	175
Among the Associations .....	192
Personalities in the News .....	248
Buyer's & Seller's Mart .....	332
Letters to the Editor .....	334
Index to Advertisers .....	336



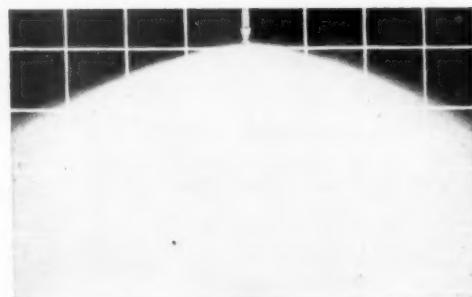
## Who says a reinforced Concrete Building can't be Destroyed by Fire...

This building, a \$3,920,000 loss,  
could have been saved with  
Grinnell Automatic ProtectoSpray

When the smoke cleared away . . . damage to this "fireproof" warehouse, and the 150,000 tires and tubes it contained, fell just short of the four million dollar mark! What a terrific price to pay for the lesson, already well-known to many, that "fireproof" buildings often serve merely as good stoves for flammable contents.

Grinnell ProtectoSpray could have prevented this costly fire. ProtectoSpray provides automatic fire protection for many types of special hazards, where standard sprinklers would be less effective. For instance: high piled storage; flammable liquids with flash points down to kerosene; wall or floor openings; oil-filled equipment; paint storage, or wherever a directional spray is needed.

Consider your own special fire hazard . . . then write, and we will be glad to send literature on the Grinnell Automatic ProtectoSpray. Grinnell Company, Inc., Providence, R. I. Branches in principal cities.



Grinnell ProtectoSpray attacks fire in three ways: 1) water vapor from the fine spray droplets dilutes the flammable vapors already present, to make them unburnable; 2) evaporation of the fine droplets removes heat from the solid or liquid source of flammable vapors, thus cutting down the fuel supply; 3) the evaporation of the droplets reduces the temperature of the fire gases, helping to prevent fire spread.



**GRINNELL**  
FIRE PROTECTION SYSTEMS

Manufacturing, Engineering and Installation of Automatic Sprinklers Since 1878

# PURCHASING PREVIEWS

A WASHINGTON REPORT FOR PURCHASING AGENTS

January 1, 1953.

## HIGH ECONOMIC LEVEL IN PROSPECT

Peak in military production will be reached this year, and will carry along with it new high levels in employment and in the gross national product.

These developments essentially provide the broad outlines of the economic outlook for the first six months of the year—and most likely for the whole year. It is a trend that has carried over from 1951 and 1952, though there are essential differences in the economic conditions as they apply to the function of procurement.

For the last 18 months, the problem has been to create facilities, acquire tools and provide materials for the production of the large volume of military production which has been held necessary for mobilization. It has been a period of restricting normal civilian activity to provide materials for military products—a period of rationing and controls.

The main objective has been to develop our industrial resources to a level where a major military effort can be sustained side-by-side with a high level in the civilian economy. Expansion of industrial facilities has proceeded at an unprecedented high rate. Materials output has been expanded. Electric power has been increased.

The expansion in these areas has been so great that in the period ahead, the availability of materials and facilities is sufficient to sustain most military requirements without restricting civilian production or rationing basic metals.

## MILITARY OUTPUT TO LEVEL OFF WITHIN THE YEAR

At some point in the 12 months ahead, there will be a leveling off in the volume of military production.

In some classes of military production, such a leveling off has already taken place, and there has even been a reduction in the volume of military requirement. This applies principally to the quartermaster items—textiles, leather, and vehicles such as trucks and jeeps.

These early indications that military demands can taper off raise some basic questions as to adjustments that will have to be made in the future. As to the timing of such adjustments, it will be at different periods for different groups of military supply.

Army and Navy requirements, except for Navy aeronautics, have already been met substantially. The large area of continuing military demand will be for air power.

We are currently at the stage of equipping the Air Force and the Navy with a good stock of current military aircraft, but this equipment is already being termed as obsolescent—if not obsolete.

Certainly the peak in aircraft production has not been reached, and under present plans the volume of aircraft production for the Air Force and the Navy will continue at increasing levels for this year and much of next.

The whole demand for electronics equipment will carry along with the aircraft program. The pace of atomic energy development and facility construction will continue at a high level.

## IMPACT OF MILITARY CONTRACTS ON INDUSTRIAL AREAS

The military production program is taking a large percentage of basic materials such as steel, copper and aluminum, and an even greater share of strategic materials such as nickel, tungsten and cobalt—and the whole national economy is being propped up, if not distended, by the mobilization program.

The areas in the country where there is an acute shortage of labor are those in which the aircraft industry or atomic energy are important factors in employment.



## ***It's not what you pay - it's what it costs***

There probably isn't a thing you buy that you couldn't buy cheaper. Provided, that is, you didn't figure the real cost—provided you weren't concerned with getting your money's worth. Right?

But you are concerned. You buy for longer wear. You buy for freedom from trouble. You buy for fewer repairs . . . for more dependable service. You buy equipment to be worked—not to be laid up. You know that thrifty buying isn't merely price-tag buying.

And it's to you, the thrifty buyer, that we like to sell Crane piping equipment. Whether it's a high pressure, high alloy valve or a  $\frac{1}{2}$ " malleable pipe fitting, every unit in the Crane line is built to last longer with fewer repairs and lower servicing costs. That's why year in and year out thrifty buyers have put more Crane Valves in service than any other make.

Crane Co., General Offices: 836 S. Michigan Ave., Chicago 5, Illinois. Branches and Wholesalers Serving All Industrial Areas.

# CRANE

**VALVES • FITTINGS • PIPE • PLUMBING • HEATING**



# PURCHASING PREVIEWS

*continued*

Detroit, which a year ago was faced with a serious problem of unemployment because steel was not being allotted to the automotive industry and there were few military contracts, now is faced with a shortage of labor.

Behind the change from excessive unemployment to what may become a serious labor shortage is the availability of steel for automotive production and the funneling of a considerable volume of military production into Detroit.

Ordnance and aircraft industries in the St. Louis area have lifted the area from unemployment to a balanced labor supply market. The improvement in the leather industry also aided in this area. In one industrial community after another, the military contracts or subcontracts have boosted business and employment.

## RISING WAGES AND CONSUMER DEMAND

The most direct impact on communities has been the increase in the industrial payroll as the result of military contracts. Just as important in its total effect has been the increased level of demand for consumer products traceable to the larger industrial payrolls throughout the country.

This whole cycle of rising military production and rising demand for consumer product is still in an ascendant stage. Accompanying this cycle, there have been rising wages and prices.

But none of these factors are particularly new phenomena. The last 20 years have been punctuated by a series of emergencies which have been met by emergency measures. Under the old administration, a letup in emergency conditions called for the injection of a new emergency. Along with each emergency, there was a cycle of rising wages and rising prices.

## OUTLOOK FOR A LEVELING OFF IN THE ECONOMY

At some period in the year ahead, the indicators in the economy will have clearly outlined the problems of a leveling off period—the indicators that show a degree of balance being reached between supply and demand; the indicators that show price levels based on scarcity instead of value cannot be sustained; the indicators that show military demand to be tapering off.

It will be a leveling off at a new peak in industrial capacity and at an unprecedented capacity to produce basic materials.

Production of steel will be close to 123,000,000 tons a year. Electric power output will be somewhere between 107,000,000 and 117,000,000 kilowatts. Between 400,-000 and 436,000 new freight cars will have been added to the rail transportation system.

## NEW APPROACH STILL UNDECIDED

to avoid.

What the new approach will be has not even been the subject for clear conjecture. The principal emphasis has been on the very current problems of taking over the Government, of bringing some order into an administration that had been marking time while the electioneering was under way, and which was inactive in the period while the new administration was preparing to take over.

There will doubtless be considerable fanfare. There will be further exposes of Fair Deal blunders and the wrongs of an administration too long in power.

The basic test of the new administration will be in how it comes to grips with the problem of leveling off the military production program without a material reduction in the gross national product. To this, an immediate answer is not available.

Whatever the answers that are required to meet the economic problems shaping up this year, they will not be small answers.

The answer of the outgoing administration might have been the injection of a new emergency, a bigger emergency. That, however, is the answer that the incoming administration is pledged



## How Norton brings you the "TOUCH OF GOLD" that adds more value to every grinding job

Grinding, the most universal, most basic of all production processes, is the true "Touch of Gold" that increases the usefulness — and the value — of every manufactured article. That's what happens every time Norton grinding wheels touch the grinding jobs *you* do.

*Here are the facts on how Norton leads the field in producing and improving the "Touch of Gold" for you and for all industry.*

### FIRST IN SIZE

At "Norton City" you'll find over a mile of buildings and thousands of skilled workers, constituting the greatest single supply source of abrasives and abrasive products — world headquarters for your "Touch of Gold". Here also is the world's newest, most modern grinding machine plant, and the famous Norton School of Grinding.

### FIRST IN RESEARCH

At Norton over 100 trained technicians, in 19 specialized laboratories, are constantly engaged in product improvement and application. This includes not only the development of new abrasives, bonds and processing tech-



niques, but cooperation with customers in the solution of everyday grinding problems. For the "Touch of Gold" that will solve your own grinding difficulties, look to the organization that leads all others in abrasive development. Look to Norton!

# Modernize

## YOUR CATALOG AND BULLETIN FILES

Bring Your Source Information Up-to-Date on New and Improved Equipment, Products and Materials. This is the first of—FOUR Pages Listing the Latest Trade Literature! Check All Four—19, 20, 22 and 24!

### Activated Carbon Air Recovery Cells for Air Purification

1. New 16-page bulletin, 117-C, illustrating and describing activated carbon air recovery or purification cells had been issued by the W. B. Connor Engineering Corp. Bulletin includes data on recently developed Type T-42 C Cell recommended for odor removal applications other than those encountered in ordinary comfort conditioning.

### Gas Fired Unit Heaters

2. NEW line of gas fired unit heaters which includes number of sizes with BTU capacities from 55,000 to 400,000 per hour and burn all types of gas, is described in Bulletin 23-2. Special design features according to the manufacturer eliminate both hot spots and cold spots on the heat exchangers. United States Air Conditioning Corp.

### Self-Locking Fastener

3. PRESTOLE snap nut fastener which makes for high speed assembly and prevents "dead-tight" fastening, is described in Bulletin 8000-A. Fastening is said to be popular for securing front mounting, and/or blind assembly applications with metal screws, or studs. The Prestole Corp.

### Machine Tools

4. CINCINNATI machines for milling, lapping, grinding, broaching, die sinking, metal forming, flame hardening and cutter sharpening, are the subject of 1953 catalog just issued by Cincinnati Milling Machine Co. Catalog includes the com-

pany's Hydroform machines, also precision grinding wheels.

### Flexible Metal Hose & Tubing

5. "QUICK Reference" catalog CC-400 describing Flexible Metal Hose and Tubing, which are made in two basic types—seamless and strip wound, shows wide range of available alloys and sizes, suggested applications, and furnishes data on hose and fittings. American Brass Co., American Metal Hose Branch.

### Air Cylinders

6. COMPLETE line of air cylinders manufactured by the Lindberg Engineering Co. is described in Bulletin #731 which includes diagrams, charts and photographs explaining the capacity, type of mounting, etc.

### Copper-Oxide Rectifier Stacks

7. COPPER-Oxide rectifier stacks are the subject of booklet GEA-5699A, which describes their basic characteristics and applications. Booklet is complete with charts,

graphs and tables presenting general technical information. General Electric Company.

### New Oiler Catalog

8. NEW catalog illustrates and gives complete engineering data on Hy-Car oilers, standard oilers, vents, caps, special tube forms, etc., made by The Eynon-Dakin Co.

### Stub-Check Payroll System

9. BOOKLET "The Fastest Known Way to Produce Paychecks" may be of much interest to your accounting or payroll department. The booklet, AB 569, issued by Remington Rand Inc., points out that the stub-check payroll system offers speed, economy and simplicity of operation, and pays for itself by savings in check forms alone.

### Centrifugal Pump Guide

10. HANDY Guide to Selection of Centrifugal Pumps, booklet 52C6059J, highlights broad line of

(Please turn to page 20)

### READER SERVICE COUPON

JANUARY, 1953

MAIL TO:  
PURCHASING—Reader Service Dept.  
205 East 42 Street  
New York 17, New York

Circle the numbers of the trade literature items you want.

1	2	3	4	5	6	7	8	9	10	11	12	13
14	15	16	17	18	19	20	21	22	23	24	25	26
27	28	29	30	31	32	33	34	35	36	37	38	39
40	41	42	43	44	45	46	47	48	49	50	51	52

Name ..... Title .....

Company .....

Street Address .....

City ..... Zone..... State .....

(Continued from page 19)

centrifugal pumps made by the Allis-Chalmers Manufacturing Co. The line includes units for handling clear liquid, corrosive or abrasive liquids, or liquids containing large percentages of solids in suspension.

#### Shell Molding Process

11. BULLETIN on Twin-Shell blending, designed to help users of the shell molding process obtain uniform blending of fine sand and phenolic shell-molding resins, explains and illustrates how to properly blend resin-sand mix with the PK twin shell blender. The Patterson-Kelley Co., Inc.

#### Motor-Generator Sets

12. ENGINEERED motor-generator sets are the subject of bulletin F-2502 which describes line of "custom-tailored" M-G sets—shunt or compound wound, from  $\frac{3}{4}$  to 1,000 kw, built to provide power for constant-voltage or adjustable-voltage systems and engineered to include synchronous or induction motors. Six typical applications are presented. Reliance Electric & Engineering Co.

#### Evenly Graduated Flow Meters

13. CATALOG 2300 presents new line of Honeywell evenly graduated flow meters for measurement, recording, indication and integration of fluid flows. Complete specifications, operating information, accessory equipment data and reference to other types of flow meters are included. Minneapolis - Honeywell Regulator Co., Brown Instruments Divn.

#### Floating Disc Clutches—1953 Catalog

14. NEW 1953 catalog contains information, photos and diagrams covering eight sizes of standard Maxitorq clutches, capacities from  $\frac{1}{4}$  to 15 hp @ 100 rpm; also, automatic overload release clutch in six sizes, pulley type, cut-off couplings, and ring type driving cups. The Carlyle Johnson Machine Co.

#### New Tachometer Bulletin

15. BULLETIN S1402, describes full line of recording and indicating

#### LATEST TRADE LITERATURE

Check Over All Four Pages!

19, 20, 22 and 24

Check Coupon on page 19

lustrated and its uses described. Rochester Ropes.

#### Refrigeration Compressors

20. EIGHT-page descriptive DB-101-160, bulletin on hermetically-sealed refrigeration compressors and condensing units of 75 to 100 hp capacity, contains table of specifications which gives technical data on two sizes of compressors, and two pages of line drawings which give overall dimensions of both compressors and condensing units. Lists indicate available accessories for condensing units. Westinghouse Sturtevant Divn.

#### Tool & Die Makers' Accessories

21. DOWEL Pins, die springs, stripper bolts and cap screws, and toolroom equipment which includes utility press, universal hand tapper and tool room vises, are covered by 8-page catalog issued by the Producto Machine Co.

#### High Speed Milling Machines

22. MACHINES that mill aluminum and related non-ferrous metal alloys at a rate of  $2\frac{1}{2}$  cu. in. per minute per hp, with accuracy, fine finish and low cost in tooling, are described in new folder. Both horizontal and vertical head models are available. High speed table feeds offer selections from 11" to 215" per minute. Parts have been milled to a surface flatness of 3 to 5 micro-inches. Onsrud Machine Works, Inc.

#### Metalworking Machines for Forming Cutting and Punching

23. NEW 32-page catalog describes Di-Acro metalworking machines for forming, cutting and punching operations in medium and light weight materials. Benders, brakes, notchers, punch presses, rod parters, rollers and shears are discussed. Twenty-six of these machines are hand operated. Ten power models are for long production runs. O'Neil Irwin Mfg. Co.

#### Automatic Voltage Stabilizers

18. AUTOMATIC voltage stabilizers, ranging from 15 to 5,000 volt amperes, are subject of 12-page bulletin GEA-5754 which contains photos and diagrams of the equipment, explains operation principles and construction and gives complete specifications. General Electric Co.

#### How to Select Slings

19. THE "Rochester Sling Handbook" shows how to select and specify slings for every purpose and how to choose correct fittings. Every important type of wire rope is il-

#### Multiwall Paper Bags

24. ALL the information needed to specify the proper multiwall bag for any of a wide variety of products is covered in an impressive bro-

(Please turn to page 22)

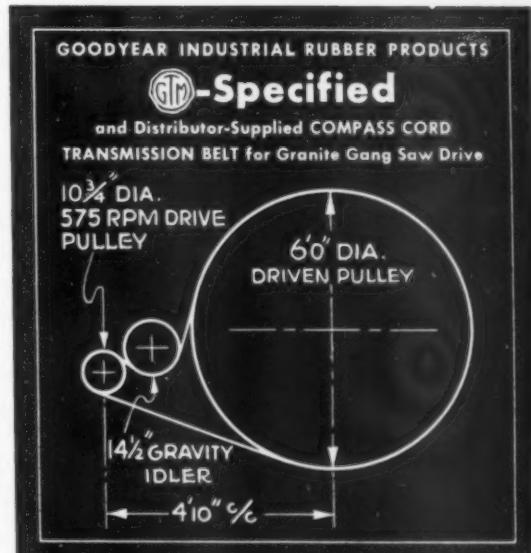
# DOUBLED BELT LIFE

by consulting Goodyear Distributor

OPERATOR of this granite gang saw called a Goodyear Distributor for help with his flat belt drive. The Distributor came, bringing along the G.T.M.—Goodyear Technical Man—to analyze the drive and make belt recommendations.

The G.T.M. studied the drive, made his engineering recommendations, specified the belts to handle the problem. Result: the COMPASS Flat Belts he recommended delivered two years' service—double the best previous record. The Distributor took over—now stocks the exact replacement belts the operator needs—can deliver them right out of stock at any time.

You can get service like this, too—specification of the right product and on-call delivery—simply by calling your nearest Goodyear Industrial Rubber Products Distributor. Look for him in the yellow pages of your Telephone Directory—handling Hose, Flat Belts, V-Belts, Packing, Tank Lining, Rubber-Covered Rolls—or write for an introduction to Goodyear, Mechanical Goods Division, Akron 16, Ohio.



Compass-T. M., The Goodyear Tire & Rubber Company, Akron, Ohio

## HERE'S WHY IT PAYS TO ORDER FROM YOUR LOCAL GOODYEAR INDUSTRIAL RUBBER PRODUCTS DISTRIBUTOR

Replacement orders filled when you need them from convenient, local stocks.

One order, one bill, one central responsibility for all your Mechanical Goods requirements. You save on valuable stockroom space, because your local Distributor maintains a full stock of what he knows you need.

Double assurance of satisfaction because the Distributor and Goodyear stand behind the products he sells you.

# GOOD YEAR

THE GREATEST NAME IN RUBBER

We think you'll like "THE GREATEST STORY EVER TOLD"—every Sunday—ABC Radio Network THE GOODYEAR TELEVISION PLAYHOUSE—every other Sunday—NBC TV Network

(Continued from page 20)

chure No. B25 produced by the Bagpak Division of the International Paper Co. Each of the five basic types of multiwall bags—sewn open mouth, sewn valve, pasted open mouth, pasted valve, and automatic or self-opening sack are illustrated in detail. Other subjects covered include bag kraft paper, bag printing, palletizing and bundling and cushion stitch closure, and various types of bag-filling and closing machines.

### Roller Bearings

25. Complete description and specifications of bearing selection for the materials handling, automotive, agricultural machinery and transportation industries are given in Catalog 522 issued by Berliss Bearing Co. Rollers, bearings, assemblies, cage and split outer race assemblies together with bearing selection data, are presented.

### Fire Extinguishing Systems

26. NEW 12-page catalog No. SYS-821 presents manual, mechanical and automatic-electric carbon dioxide fire extinguishing system protection for spray booths, baking ovens, quench and dip tanks, paint and flammable liquid storage rooms, power rooms, generators and engine compartments. Randolph Laboratories, Inc., Systems Divn.

### Gas or Diesel Fork Trucks

27. BULLETIN P-5126B describes Yale 6,000 pound capacity fork truck which is available with either gas or diesel power plant. Design standardization program now makes it possible to install either type power plant in the same size chassis for fork lift trucks in capacities from 4,000 to 10,000 pounds. Yale & Towne Mfg. Co., Philadelphia Divn.

### Stub Screw Machine Reamers

28. STUB screw machine reamers and floating holders "for reducing tooling costs and increasing production" are illustrated and described in new bulletin issued by Pratt & Whitney.

### Finishing Discs, Bonnets, Pads, Mitts

29. DISCS, bonnets, pads and mitts for product finishing are illustrated

## LATEST TRADE LITERATURE

Check Over All Four Pages!  
19, 20, 22 and 24  
Check Coupon on page 19

and described in new Handy catalog. Heavy duty to light duty, cutting to finishing, bonnets, discs and pads are adaptable to all types and makes of flexible shaft and portable polishing machines. The Handy Sales Mfg. Co., Inc.

### Micro Precision Switches

30. MICRO precision switches designed primarily for the control of alternating circuits in commercial and industrial applications, are described and illustrated in catalog 82. Micro Switch.

### Converts to Tough, Resilient Rubber

31. THIOKOL liquid polymer, LP-2, a viscous liquid which converts to a tough, resilient, solvent-resistant rubber at room temperature is subject of new folder which describes its properties and suggested applications—such as impregnation, filling, protective coating, binder, sealing, caulking, etc. Thiokol Corp.

### Bellows—Metal Hose

32. FLEXIBLE metal hose and instrument bellows for original equipment manufacturers, has just been released by Flexonics Corporation. Bellows section includes stainless steel, brass, and bronze bellows, bellows assemblies, and bellows devices. Hose section gives specification and application data on convoluted and corrugated types of flexible metal hose, and details, on flanges, couplings and other fittings.

### Metal Cleaning—Small Foundries

33. "AIRLESS Blast Cleaning in Small Foundries" is subject of bulletin 871 which shows how operators whose production is comparatively small, can justify modernizing their cleaning room by speeding production and saving time. One small foundry cut its cleaning costs 66% with swingtable and another cut its cost 67% with Tumblast. American Wheelabrator & Equipment Corp.

### Water Softeners

34. Troubles caused by hard water and the economies effected by curing them, are discussed in 16-page bulletin No. 2386, which explains the three basic types of ion-exchange equipment and shows how they can be profitably utilized. The Permutit Co.

### Set Screws

35. LIST prices and dimensional information on Setko and Zip-Grip set screws are set forth in illustrated catalog No. 16 issued by the Set Screw & Manufacturing Co.

### Gate Valves

36. NEW line of cast steel gate valves is covered by catalog section 12-E issued by Edward Valves, Inc. Items cataloged include cast steel gate valves in 300, 600, 900 and 1500 lb. sp classes. All are furnished in sizes from 2½" through 12". Catalog gives design details, material specifications, pressure and temperature ratings, etc.

### Internal Grinding Wheels

37. GRINDING wheels for internal grinding operations are the subject of catalog bulletin ESA-29, which also includes information on grain and grade recommendations for internal grinding various materials, and tables of standard sizes and shapes up to 2½" diameter. Simonds Abrasive Co.

### Thin Locknuts

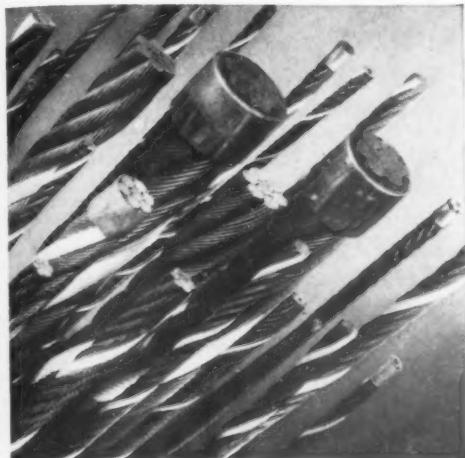
38. THIN locknuts, one-third lower in height, which meet or exceed in many instances minimum A-N tensile requirements for regular-height locknuts, are described in Flexloc catalog issued by Standard Pressed Steel Co. They are one of the items in the Flexloc line of self-locking nuts. Sizes, fits, part numbers, tensile values, etc. are listed in the catalog for all Flexlocs in both thin and regular design and for aircraft and commercial use.

### Stamping Case Histories

39. CONCISE analysis of 13 stamped parts and fabricated assemblies are presented as examples of modern techniques and facilities of The Crosby Co., metal stamping specialists, in 24-page book. The examples are both simple and complex.

(Continued on page 24)

# MACWHYTE



## PREformed . . . Internally Lubricated **WIRE ROPE** for all equipment

From Macwhyte's complete line of a thousand and one sizes and types you get rope best suited to your equipment, designed, PREformed, and internally lubricated to provide long, safe service. (Send for Catalog G-15.)



## Wire Rope **SLINGS**

for lifting and moving materials and equipment in production or maintenance.

There are hundreds of types and sizes of Macwhyte Flat-Braided, Round-Braided, Single-Part, and Grommet Slings. All are custom made in length, capacity, and flexibility to meet your needs. (Send for Catalog S-3.)



## Wire Rope **ASSEMBLIES** for machine parts, controls, and operating devices.

Macwhyte Safe-Lock wire rope assemblies are made to order in length, strength, and flexibility desired. Terminals are permanently attached to one or both ends. There are many standard types. (Send for Catalog 5201)

Macwhyte Company, 2918 Fourteenth Avenue, Kenosha, Wis. Manufacturers of Internally Lubricated PREformed Wire Rope, Braided Wire Rope Slings, Aircraft Cables and Assemblies, Monel Metal, Stainless Steel Wire Rope and Wire Rope Assemblies. Mill depots: New York • Pittsburgh • Chicago • St. Paul • Fort Worth • Portland • Seattle • San Francisco • Los Angeles • Distributors throughout U.S.A.

Catalogs are available on request to Macwhyte Company or authorized distributor.

1018 SW



(Continued from page 22)

Crosby's services and diversified equipment are summarized.

### CO<sub>2</sub> As Machine Tool Coolant

40. CARBON dioxide as a machine tool coolant. This is the title of booklet on this new development issued by the Pure Carbonic Co., a division of Air Reduction Co., Inc. It presents a resume of current knowledge and experiences in the application of CO<sub>2</sub> as a coolant for cutting, grinding and other metal machining operations. Utilization, equipment, and advantages of use are explained.

### Tool Precision Grinders

41. THE complete line of Landis precision cylindrical grinding machines is described in new general catalog, which contains 23 pictures, sketches and brief specifications to show the application and size of each type of machine—universal grinders, plain grinders and single purpose high production types. Landis Tool Co.

### Industrial Hose

42. INDUSTRIAL hose assemblies, couplings, stems, swivels and accessories for a broad field of industrial application, are described and illustrated in new catalog which sets forth that the hose is specially designed for intermediate and very high pressure, for ordinary and elevated temperatures, and for excessive flexing and rough handling. J. N. Fauver Co., Inc.

### Cast Tooth Sprocket Wheels

43. NEW catalog No. 2467 lists 207 sizes of cast tooth sprocket wheels available from stock, for 78 popular types and sizes of chains employing such wheels. These include Ewart Link-Belt, Class 400 pintle, Class SS bushed roller, Class H pintle and Class C combination chain. This 8-page book issued by Link-Belt Company tells how to select stock sprocket wheels for prompt delivery accurately fitted to the chain.

### Gravity and Power Conveyors

44. STANDARDIZED gravity and power conveyors are the subject of Bulletin 63-C issued by Standard Conveyor Co. These include roller and wheel conveyors, portable belt conveyors, utility belt conveyors,

### LATEST TRADE LITERATURE

Check Over All Four Pages!

19, 20, 22 and 24

Check Coupon on page 19

level belt and incline belt conveyors; also, pneumatic tube systems.

### Pressure Tape for Bundling

45. HOW 14 "Scotch" brand pressure-sensitive tapes can be used for holding and bundling tasks is shown in a new 8-page folder which contains 50 photos of typical tape applications such as combining packages in "deals", holding palletized loads, bundling steel pipe, holding protective coverings, and for holding last lap of sheet steel or wire coils. Also, semi-automatic and fully automatic dispensing machines are pictured. A table lists the properties for each tape—strength, adhesion, thickness, etc. Minn. Mining & Manufacturing Co.

### Organic Chemicals Catalog

46. NEW and completely revised edition of the Eastman Organic Chemicals Catalog, No. 38, including new section on the nomenclature of organic chemicals is announced by Distillation Products Industries, division of Eastman Kodak Co. The list provides detailed information on the more than 3,500 organic chemicals supplied by the company. Some 256 new chemicals have been added to the list since publication of the last catalog. Special lists group various compounds according to their use or structure. Nomenclature has been revised to correspond to the practices followed by Chemical Abstracts.

### Squeezable Polyethylene Bottles

47. BROCHURE describes squeezable Plaxpak polyethylene bottle, and is illustrated with pictures of typical products packaged in the plastic "squeeze bottle" container. Typical uses are listed. Data on closures and accessories and printing and labeling are also given. Plax Corp.

### Hardenable Stainless Tubing Steels

48. TWO economical stainless tubing steels having resistance to cor-

rosion and oxidation and also the ability to be hardened by heat treatment to develop good mechanical properties, are discussed in Technical Data Card 143 announced by the Tubular Products Divn. of Babcock & Wilcox Co. The steels are B&W Croloy 12 (12% chromium steel—AISI Type 410) and B&W Croloy 12-2 (12% chromium, 2% nickel steel—AISI Type 414.)

### Slotted and Phillips Head Screws

49. CATALOG-price list has been issued by Southern Screw Co., manufacturers of wood screws, covering complete line of wood screws in steel, brass and silicon bronze, Slotted and Phillips heads, in a wide range of sizes.

### Capacitor Catalog for Military Micas

50. CATALOG 31, a new reference for engineers and purchasing agents, details transmitter type mica dielectric capacitors which conform with Joint A-N Specification JAN-C-5. It provides illustrations, engineering drawings and technical characteristics of each unit. Sprague Electric Co.

### Booklet on Magnetic Alloys

51. "WHAT is it", "Where to use it" booklet on Magnetic Alloys, No. TD-52-100, has been prepared by Westinghouse Electric Corp. Alloys covered include Hipernik, Hiper-nik V, Conpernik, and Hiperco, which provide a wide range of magnetic properties needed for many special requirements. Inclusion of 15 core loss and magnetization curves makes the booklet especially valuable when matching the correct alloy with a specific application.

### Molybdenum Disulfide Lubricant

52. NEW molybdenum disulfide lubricant named "Anti-Seize" is described in bulletin released by the Bel-Ray Company, Inc. Bulletin describes advantages of the product in a wide range of uses wherever extreme pressures are encountered. Anti-Seize will lubricate at temperatures below sub-zero and up to 750 deg. F., and will prevent galling and seizing at bearing pressures well over 100,000 psi.

# INDUSTRY DEPENDS ON

## G-E **TRI CLAD** MOTORS

REG. U.S. PAT. OFF.

Here are three typical tough jobs being done safely, economically, and without interruption, by G-E Tri-Clad motors. They help show why more than 10,000,000 horsepower of G-E Tri-Clad motors are serving American industry today.

### WIDEST VARIETY

With the widest selection of standard motors obtainable anywhere, the Tri-Clad motor line offers ratings up to 2000 hp; all types of enclosures; gear motors, brake motors, and adjustable-speed drives—plus many other mechanical and electrical modifications to meet your requirements.

### TRIPLE PROTECTION

You get triple protection with *every* Tri-Clad motor—against physical damage, electrical breakdown, and operating wear and tear. Completely enclosed bearings last longer because they can be relubricated if necessary—and *without shutdown!* For specific product information, use the coupon below, or contact your nearby G-E Apparatus Sales Office, authorized G-E Agent or Distributor.

### IMMEDIATE DELIVERY

Most standard G-E Tri-Clad motors are available immediately from stock. And the most complete sales and service network in the motor industry assures you prompt service by trained specialist and application engineers, for all your motor problems. General Electric Co., Schenectady 5, New York.

752-16

### PROGRESSIVE MECHANIZATION...

a new G-E MORE POWER TO AMERICA program—motion picture and manual—case histories of the latest mechanization trends.



Send for literature.

Section L 752-16

General Electric Co., Schenectady 5, N. Y.

Please send me the following on Progressive Mechanization:

- Free copy of the Progressive Mechanization Manual (GEA-5789)

Please send the following product bulletins:

- GEA-3580 (Open Drip-proof Motors)  
 GEA-4400 (Totally Enclosed Motors)

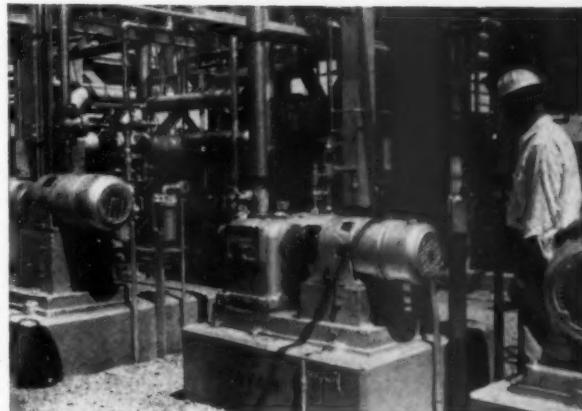
Name.....

Firm.....

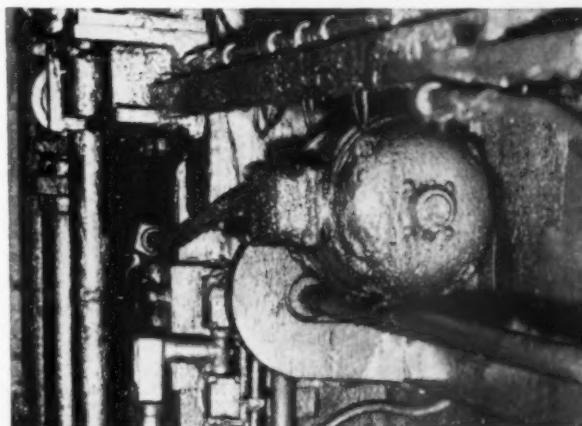
Address.....

City.....

Zone..... State.....



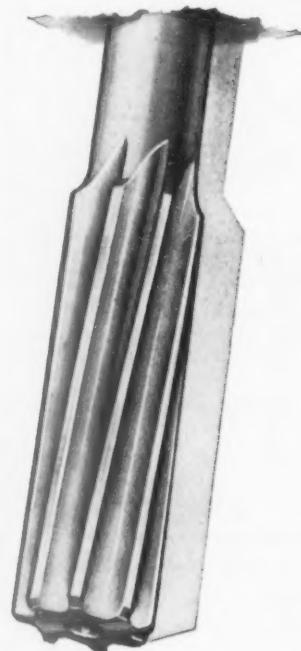
**EXPLOSIVE ATMOSPHERE** dangers are avoided by using standard explosion-proof Tri-Clad motors, such as these gear-motors driving water and hydrocarbon pumps in an oil refinery.



**OIL, MOISTURE, ABRASIVE DUST** can't stop this totally-enclosed Tri-Clad motor, operating below the strip in a cold strip steel mill. Motor is completely protected inside and out.



The Finest in Quality Reamers



The Reamer Specialists

LAVALLEE & IDE, INC.  
CHICOPEE, MASS.

# F.O.B.



## FILOSOFY OF BUYING

PURCHASING is a pretty broad term, and its related responsibilities in the field of materials and property management frequently defy exact classification in the neat pigeonholes of an organization chart. In the second article of a series entitled "Management at Work", our contemporary, *Electrical World*, features Chet Ogden, Manager of Purchases for The Detroit Edison Company and Past President of N.A.P.A. The E.W. reporter opines that Chet's company title is a misnomer. "His duties (see table) are so varied that he could easily use another half dozen titles." The accompanying table shows these duties to include:

Purchasing of materials and supplies.

The purchase or lease of real estate.

The custody and management of non-utility property.

The purchase and sale of patents. Traffic matters.

The Standards Catalog and Standard Material Specifications.

The operation of office and service buildings.

The operation of restaurant service.

The inspection and maintenance of all elevators and cranes (except those of the Production Department) and their maintenance for the Central Heating Department.

The general supervision of fire protection methods and equipment except for the production Department.

Salvage Sales.

gathered to view the remains, the reporter specially noted County P. A. Christiansen, fervently hoping for a high tide that would wash away or bury the body before some more direct action became necessary on the part of the county officers.

PURCHASING agents, attention!

Meet your colleague, the attractive Assistant P. A. of the Loup River Public Power District, Columbus, Neb.—Miss Joyce Elhausen, who numbers among her other titles that of Miss Nebraska, 1951.



We are assured by the publicity department of Behlen Mfg. Co., which sent us the photograph, that this is strictly a business picture, as Joyce, in the line of her purchasing duties, tests the finger-tip driving ease of a new power steering unit on a big tractor. The man? Oh, that's Walter Behlen, president of the company producing the equipment, who keeps his sales technique from getting rusty by personally attending to a few special assignments such as this.

SURPLUS disposal is one of the responsibilities of the purchasing agent, and sometimes this can be a job of major proportions. The Santa Cruz (Cal.) *Sentinel-News* recently reported that a huge sea lion had been shot by a person or persons unknown, stranding about 1,800 pounds of carcass on a sand bar at the mouth of the Pajaro River, close to the town of Watsonville. Among the many people

FOLKS at the Ritter Company of Rochester, N. Y., manufacturers of dentists' equipment, recognize that product development and production depend upon teamwork, in which the supplier has an important part. Further, they know that the suppliers' business prospects are closely tied in with their own, so that there is a mutual interest in the new product. They have a pleasant way of letting their sup-

pliers know that they appreciate these facts. Early last month, every one of their regular suppliers received a letter, along with a copy of the handsome new catalog. The letter, signed by Purchasing Agent Bill Sauers, said:

"As one of the many companies who have worked with us during the past few years in our development of a new Dental Unit, I know that you will be interested in looking through the catalog which is enclosed, and seeing for yourself exactly what your efforts have helped to produce.

"This Unit will be officially introduced to the Trade and Profession at the Greater New York Dental Meeting, Hotel Statler, New York City, December 8 to 12 inclusive. It has met with instant approval and commendation from those who have already seen it, and the outlook for the year ahead is that your company and mine have a major job on our hands to meet the demand—a job which I am sure we can do successfully with your continued whole-hearted support and cooperation.

"Incidentally, if any members of your organization are in New York during the week of December 8th, we would be happy to have them visit our exhibit and have a personal demonstration of this new equipment."

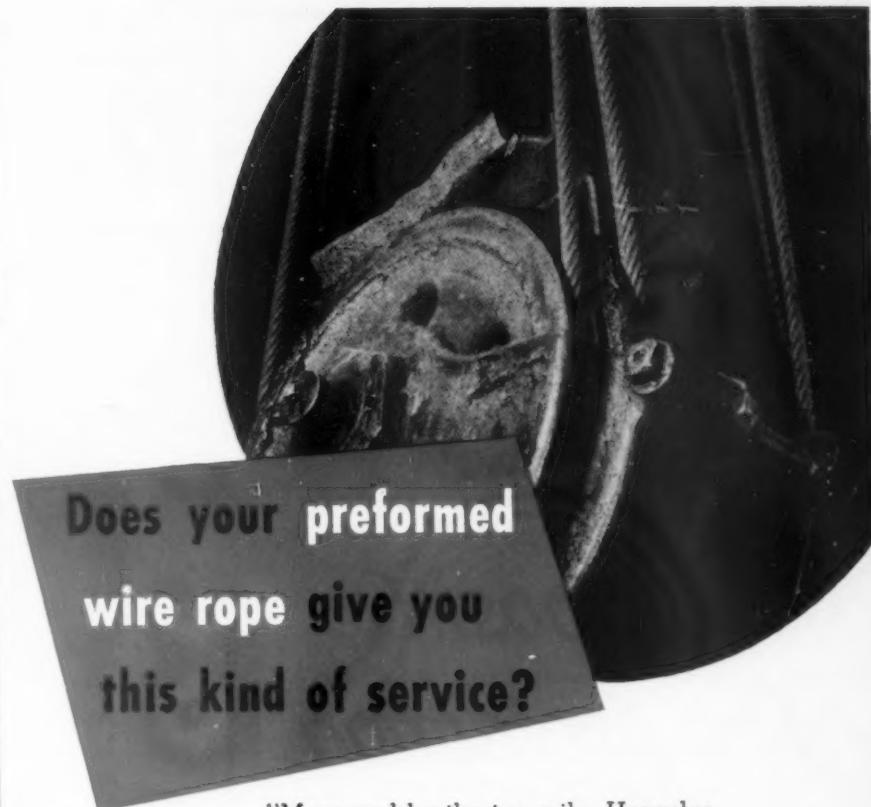
Mr. Sauers was among the Ritter personnel in attendance at the exhibit, giving particular attention to visiting suppliers—rounding out an exceptionally effective illustration of how to cultivate and maintain cordial vendor relations.

• •

**B**USINESS columnist J. A. Livingston is cautiously optimistic about the outlook. He predicates this feeling on the N.A.P.A. Business Survey Report, and on his estimate of purchasing agents generally. In one column he comments: "The National Association of Purchasing Agents, usually a gloomy tribe, predicts business will be good well into the first quarter of 1953." At another point he states: "Only this week, the N.A.P.A. reported that companies are buying a bit more bravely." Courage, men! — and smile when you place that order.

• •

**R**ESOLVED: that in 1953 I shall make my purchasing department one in which my company can take pride, and with which our vendors will be glad to do business.

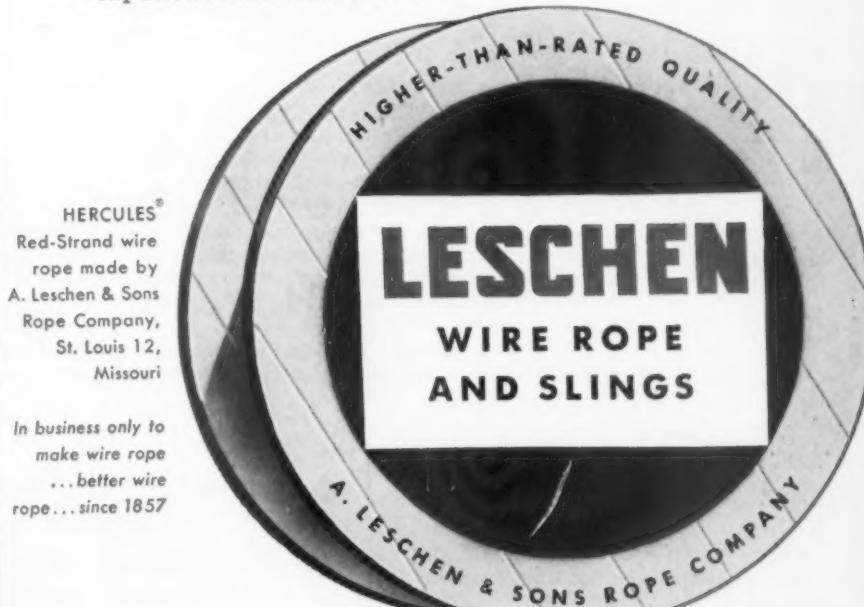


"Measured by the ton mile, Hercules Red-Strand preformed outlasts others about two to one," reports one operations manager. Another operator testifies, "Our records show Red-Strand is considerably out in front of four other ropes."

#### Why HERCULES Red-Strand excels

What's the reason for such performance and praise? In simple terms, it's because *higher-than-rated quality* in Red-Strand preformed delivers *longer-than-expected service*.

If you're not completely satisfied with your wire rope service, try Red-Strand preformed. You'll experience the difference too.



DISTRIBUTORS IN ALL PRINCIPAL CITIES



## FIRE EXTINGUISHERS

*give  
fast, positive  
fire protection*



With C-O-TWO Dry Chemical Type Fire Extinguishers the heat-shielding dry chemical is a non-conducting, non-abrasive, non-toxic, finely pulverized powder compound . . . blankets fire instantly . . . exceedingly effective on flammable liquid, gas and electrical fires, as well as surface fires involving ordinary combustible materials. The exclusive inverting design renders constant free flowing dry chemical, assuring faster, more effective and complete discharge.

Convenient 4, 20 and 30 pound hand sizes . . . no syphon tubes or valves within the cylinder to



MANUFACTURERS OF APPROVED FIRE PROTECTION EQUIPMENT

Squeez-Grip Carbon Dioxide Type Fire Extinguishers

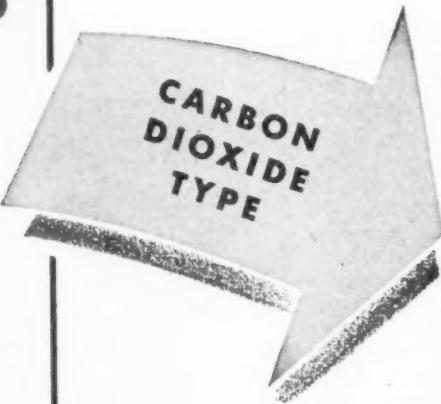
Dry Chemical Type Fire Extinguishers

Built-In High Pressure and Low Pressure Carbon Dioxide

Type Fire Extinguishing Systems

Built-In Smoke and Heat Fire Detecting Systems

- Top quality backed by experienced engineering results in operating superiority at all times with the world famous C-O-TWO Squeez-Grip Carbon Dioxide Type Fire Extinguishers as well as the newer C-O-TWO Dry Chemical Type Fire Extinguishers. Furthermore, modern manufacturing facilities and extensive field testing, together with approvals such as the Underwriters' Laboratories, Inc., Factory Mutual Laboratories and Government Bureaus assure you of fast, positive action the instant fire strikes.



With C-O-TWO Squeez-Grip Carbon Dioxide Type Fire Extinguishers the penetrating carbon dioxide is a clean, dry, non-damaging, non-conducting inert gas . . . smothers fire in seconds, leaves no after fire mess . . . highly effective on flammable liquid and electrical fires, as well as some surface fires involving ordinary combustible materials. The C-O-TWO Squeez-Grip Valve is the greatest single contribution to the releasing of carbon dioxide for first aid fire fighting . . . just squeeze lever to open . . . release to close.

Convenient 2½, 5, 10, 15 and 20 pound hand sizes . . . discharge horn non-conducting, shatterproof construction. Also, convenient 50, 75 and 100 pound wheeled sizes . . . available with sturdy, wide-faced wheels either with or without rubber tires, as well as available with or without discharge hose and horn protection cover.

become clogged or inoperative . . . discharge hose and squeeze type discharge nozzle remain empty until actuation takes place . . . one piece removable top assembly. Also, convenient 150 pound wheeled size . . . sturdy, wide-faced wheels . . . discharge hose and two position discharge nozzle having soft or solid stream fully enclosed in protection casing . . . footrail and dual bar handle provide easy inverting.

Act now for complete free information on these fast, positive fire extinguishers. Remember fire doesn't wait . . . get the facts today!

### C-O-TWO FIRE EQUIPMENT COMPANY NEWARK 1 • NEW JERSEY

C-O-TWO FIRE EQUIPMENT OF CANADA, LTD. • TORONTO 8 • ONTARIO

Sales and Service in the Principal Cities of United States and Canada

AFFILIATED WITH PYRENE MANUFACTURING COMPANY

## REAL SAVINGS

THE best laid plans gang aft agley. The best intentioned and most soundly conceived policies have an unfortunate habit of misfiring and defeating their own purposes when they are imperfectly understood or improperly applied.

Recent emphasis in purchasing has properly been on cost reduction and the attainment of greater value in exchange for the company dollar. We are heartily in support of this, and have done our best to promulgate the modern techniques of value analysis and to report its spectacular accomplishments. It is consistent with this support and this promotion to point out one of the pitfalls into which some such programs have fallen.

A part of any comprehensive value analysis program is the creation of cost-consciousness throughout the organization, and particularly all the way down the line in the purchasing staff. To accomplish this, some purchasing directors furnish each buyer with a form on which to record their day-to-day savings, as a means of reminding them of their cost-reduction responsibilities and encouraging them to strive constantly for high standards of performance. The idea has quite a bit of merit.

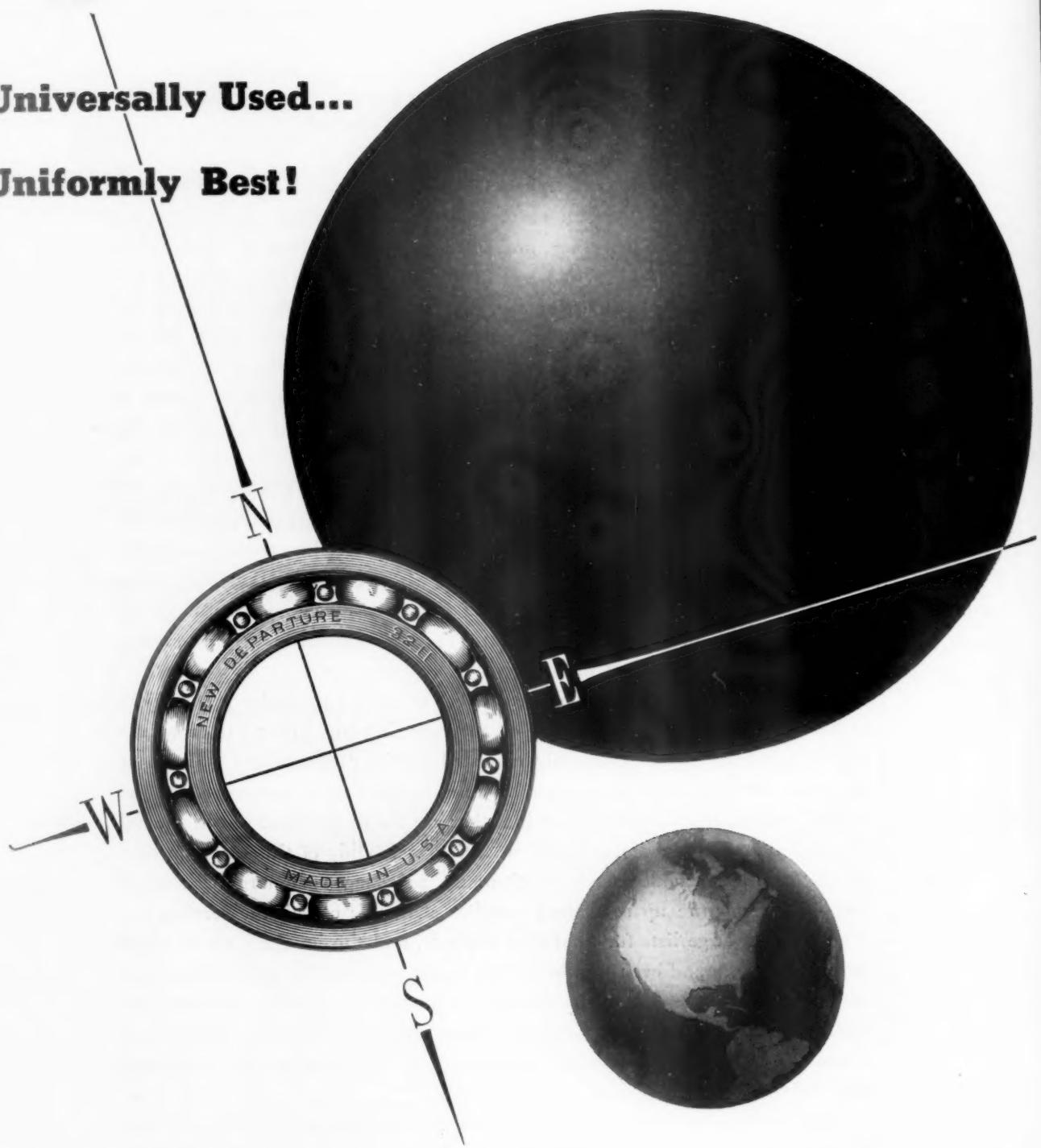
However, consider the psychological effect of such a reminder on the desk of the inexperienced junior buyer or the branch plant buyer far from the top office. Unless he is thoroughly educated in the purposes and policies of the program, it is likely to become a strong temptation to purchase "for the record" rather than for the real savings that are the desired end result. Among the instances that have come to our attention in a study of this situation are: ill advised and unauthorized substitutions, patronage of marginal sources that fail to measure up to desired supplier standards of reliable service, use of excessively large lists for quotation requests, and the breaking up of small orders into more and even smaller orders to get infinitesimal price advantages on individual items—all at the expense of greater purchasing cost and the deterioration of vendor relationships. Some of these examples come from companies where top purchasing management is distinguished for sound and progressive policy.

Sound purchasing comes first. Value analysis and cost reduction are a part of this, but must not be permitted to override and destroy the primary objective. Departmental education and training and directives, and the analysis of cost reduction reports, must all be keyed to this fundamental principle, or cost savings efforts may easily become retrogressive rather than a constructive part of procurement policy.

*Stuart F. Henrutz*

**Universally Used...**

**Uniformly Best!**



- Throughout the world, New Departure ball bearings are in universal use . . . in motor vehicles and machinery . . . in instruments and implements . . . in conveyor lines and textile looms. Providing support for moving parts, they reduce friction, wear and maintenance . . . permit bigger loads and better design.

- Sixty years of research, engineering and production experience back up the New Departure name. Whether it's a jewel-like instrument bearing, or a giant, New Departure can build it best!

- New Departure's sales engineering staff is always ready to apply its skill and experience to your particular problem.

- New Departure bearings are quickly available at your equipment dealer or bearing distributor—supplied from the industry's largest network of warehouse stocks.

NOTHING ROLLS LIKE A BALL

NEW DEPARTURE • DIVISION OF GENERAL MOTORS • BRISTOL, CONNECTICUT

Also Makers of the Famous New Departure Safety Brake

# Highlights

This issue's important features  
summarized for the busy reader



There's a human interest story on page 84, telling about a purchasing agent's experience with a buying method that has produced big results for one company and may prove mighty helpful to others, in a pinch—provided you don't try to carry the idea too far. Here is a resourceful buyer who beat long delivery schedules and kept his company operating at capacity by taking advantage of **Plant Auctions** to procure needed equipment and materials when such things were exceedingly hard to get, and made some substantial cost savings as well. It's not recommended as a regular buying policy, but it's surprising how many items may be available from such sources.

Much of the study looking toward **Improvement in Purchasing** has been in the nature of trouble-shooting. This is helpful, but real progress comes with a management policy and program of controls in the areas of service, organization, procedures, physical facilities, personnel, and performance. For the outline of such a program and the direction which constructive development can be expected to take, turn to the article on page 77.

In a purchasing program where more than 80,000 stock items are involved, there's a real problem of detailed procedure to be solved. The **Purchasing System** illustrated and described on page 86 has the answer to this problem. Appropriately, since the company in question happens to be the Addressograph-Multigraph Corporation, the key to effective and economical operation has been found in the application of modern duplicating techniques to replace manual typing methods, resulting in a coordinated system of records and purchase forms, with basic data entered from standard stencil plates carrying article descriptions, suppliers' addresses, and related information. Accuracy, flexibility, and a minimum of clerical effort are among the benefits obtained.

A new angle on **Vendor Relations** is presented on page 91, that is an extension of the most progressive modern purchasing thought. Every cost is too high, this writer

declares, that is based on yesterday's materials and methods. Instead of generalizations on cooperation and service, therefore, he suggests the specific field of cost reduction as an area in which salesmen and buyers can and should work together to mutual advantage.

**Plant Maintenance** is more than good housekeeping; today's emphasis is on preventive maintenance—a planned program that can save many dollars in better operation, preventing costly breakdowns, and extending the life of plant equipment. This is the theme of the article on page 109, particularly timely in view of the plant maintenance conference to be held at Cleveland this month. In similar vein are the articles on page 80, dealing with the reclamation of factory tools, and on page 116, with some proved ideas on plugging common leaks in operating expenses throughout better management.



A variety of **Legal Questions** are covered in this issue: responsibility for lost and damaged shipments (page 82), proof required when dealings are handled through the mail (page 114), and breaches of warranty (page 120).



The **Subcontractor's P.A.** is somewhat limited in the scope of his service by the detailed specifications of his customer, but he should not overlook opportunities for greater value that will benefit both the customer and his own organization. An interesting case study on page 98 reports one instance in which such initiative paid substantial dividends.

Do you use **Wire Rope** or **Powder Metal**? The articles on pages 93 and 96 will help you to a better understanding of these industrial items.

Are you making full use of these monthly departmental features compiled especially for the purchasing agent? The **Washington Previews** (page 13) keep you informed on current developments in governmental policy. Another section is devoted to **Office Equipment and Forms** (page 175). Informative **Trade Bulletins and Catalogs** listed on page 19 are yours for the asking. **New Products and Ideas** are also reported (page 128).

## COMING—IN NEXT MONTH'S ISSUE

Lubricants — Fire Protection — Fasteners

More Modern Purchasing Procedures



# RYERSON

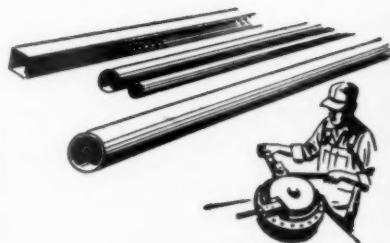
## The Industrial P.A.'s Department Store

Here are a few of the many types of steel and related products on hand right now, ready for immediate shipment from your nearby Ryerson plant. Many may be used in place of products that are still hard to get. Check the items you need, and save time by ordering them next time you call Ryerson.



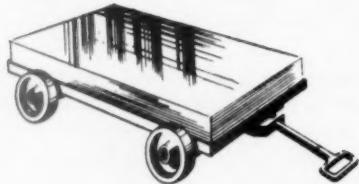
ALLOYS

Tested alloys of known hardenability, both standard and aircraft quality. Complete heat treatment guide with each shipment.



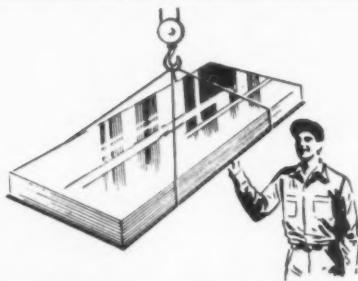
WELDED MECHANICAL TUBING

Hot and cold rolled, rounds and squares in a wide range of sizes. Consider cost. Substitute for seamless tubing.



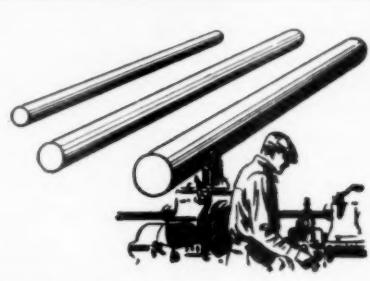
CARBON SHEETS

Both hot and cold rolled coming into better supply, especially cold rolled in the heavier gauges.



STRAIGHT CHROME STAINLESS

No allotment required for these stainless bars, plates and sheets—and they can often replace restricted nickel-bearing types.



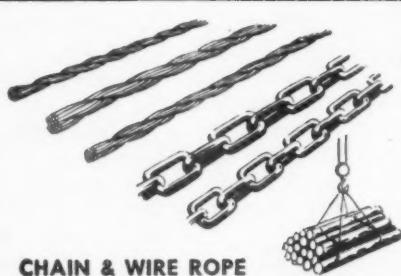
TOOL STEEL

Water, oil or air hardening steel. High in quality; economical in price. Hardening data with every shipment.



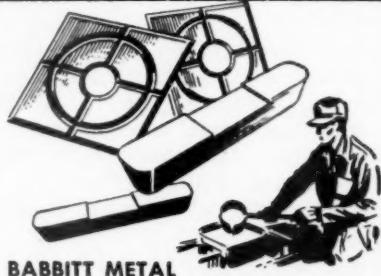
SAFETY PLATE

Strong, non-skid Inland 4-Way Safety Plate protects feet against slipping, floors against wear. Easily fabricated.



CHAIN & WIRE ROPE

Rugged, dependable TM chain, iron, steel and alloy qualities, furnished to order. High quality wire rope shipped from large stocks.



BABBITT METAL

Glyco Babbitt, an exclusive Ryerson product, has physicals equal to high tin Babbits; costs substantially less and is unrestricted.

## RYERSON STEEL

JOSEPH T. RYERSON & SON, INC. PLANTS AT: NEW YORK • BOSTON • PHILADELPHIA • CINCINNATI • CLEVELAND • DETROIT  
PITTSBURGH • BUFFALO • CHICAGO • MILWAUKEE • ST. LOUIS • LOS ANGELES • SAN FRANCISCO • SPOKANE • SEATTLE

*The P. A. must be prepared for any eventuality*

## WATCH the Warning Signals

By A. R. Lama



**A. R. ("Al") Lama** is Purchasing Agent of the Los Angeles Brewing Company, a Pabst subsidiary, and is currently serving as Vice President of the National Association of Purchasing Agents for District 1, which embraces the Pacific Coast States and British Columbia.

He is a midwesterner by birth, growing up in Burlington, Wis., Marshalltown, Iowa, and Chicago. His first jobs were with the wholesale division of Carson, Pirie, & Scott and in the Continental Illinois Commercial Bank. The family moved to California in 1927, and Al promptly took a position with the Arrowhead & Puritas Waters, Inc., and affiliated companies. During his 20-year association with this organization, he progressed from branch office work to accounting, Plant Superintendent's office, and general stores. In 1935 he was appointed Purchasing Agent of the company and continued in that position for 12 years.

Upon entering purchasing work, he joined the Los Angeles Purchasing Agents' Association in 1935. During the next few years, his activities included the chairmanship of practically every major Association committee—Membership, Attendance, Picnics, Public Relations, CED and Hi Jinks. He was elected to the Board of Directors in 1940, became President in 1944-45, and National Director the following year.

In 1947, he left purchasing to try his hand at the other side of the desk, selling industrial paint contracting with Erick Lundein and handling fleet sales with General Motors Truck Division. In September 1949, he accepted his present position with the Los Angeles Brewing Company and resumed his active participation in Association affairs. For the past two years he has been a member of the National Committee on Public Relations, and Chairman for District 1. He was elected to the National Executive Committee last spring and took office at the Atlantic City convention in May.

Mr. Lama makes his home in suburban Temple City. For recreation, he fishes, dabbles at golf, and plays a pretty fair game of poker. His son Richard, recently returned from a tour of duty in Korea, is a student at UCLA.

**A**T almost any given time within the experience and memory of today's purchasing agents, there have been problems affecting business—and particularly the purchasing function—with regard to markets and prices and policies.

We are presently in a period that can well be described as a wartime period, with substantial military requirements for actual combat. More precisely, it is referred to as a "cold war" period, with a dual economy based on military preparedness along with our civilian activities. At the same time, there is the possibility and hope of world peace. We cannot foresee exactly which of these conditions will prevail, for the decision is not altogether in our own hands. We must prepare for all three.

Many of the economists and commentators and "experts" point to the entire, over-all structure of markets and commodity prices. For the past several months, the trend in prices has been down, and this trend is world-wide in its scope.

As purchasing executives, commodity prices and markets are among the prime factors in our trade. We are definitely concerned with these trends. For the past ten years we have been operating under conditions of material shortages and governmental regulations, plus the problems of inflation. It would be well now to consider the possibility, and be prepared in our

thinking, for the return of a buyer's market and a period of deflation.

The No. 1 job facing us will be to keep informed on those commodities that particularly affect our own companies or industries, and to advise management in this regard.

Present conditions also call for a close study and analysis of our own inventory situation.

It would be advisable, if we have

not already done so, to set up a program of cutting costs by analyzing values, putting to work one of the more recent purchasing tools that have been added to purchasing science. A booklet on this subject has been developed by the Educational Committee of N.A.P.A., and is available to local associations for study groups.

(Please turn to page 314)

## GEORGE E. HENRY 1894-1952

PURCHASING men lost a loyal friend and an able, tireless champion when death came, without warning, to George E. Henry, Associate Editor of PURCHASING Magazine, on the evening of December 3rd. He had spent the day with a group of industrial press representatives at the opening of Link-Belt Company's new plant at Colmar, Pa., and was returning to New York when he collapsed of a heart attack on the Philadelphia station platform. He was rushed to a hospital by police ambulance, but was pronounced dead on arrival. He is survived by his widow, Mrs. Marie Hanson Henry of White Plains, N. Y., and two sons, George E., Jr., of Scarsdale, and Thomas E., a student at Massachusetts Institute of Technology.

George was a native of Geneva, Ill., and served his business apprenticeship in a Chicago railway office. He entered the business paper field in 1920 as a reporter on *Hardwood Record* and *Rock Products*. The following year he joined Porter-Langtry Company as editor of a group of related publications in the building material and merchandising field, continuing in that position until 1932. For the next five years he was with a public relations organization, doing research and preparing manuals on a variety of construction materials and equipment and editing the house organs of his company's clients. In 1937, he joined the firm of Designers for Industry, working on functional design of industrial products and as editor of *Streamlining*, a monthly

publication reporting on new developments in materials and methods and their industrial applications.

He joined the Conover-Mast organization in 1942, as Associate Editor of PURCHASING, and promptly acquired a tremendous enthusiasm for his new field. Few men have recognized so early and so clearly the vast potentialities of the purchasing function and responsibilities in industry and government, or have labored with such devotion to bring these potentialities to realization. He brought to the job a lively curiosity, a prodigious capacity for work, and a genuine talent for friendship; and he applied to it his wide experience in research and public relations. A self-taught student, he made of himself a practical authority in such diverse fields as metals technology, electronics, plastics, office machinery and procedures—a fact that was somewhat obscured by his modesty concerning his own accomplishments. He

made a host of friends among the purchasing men he worked with. Less well known, perhaps, was his intense personal interest in the younger men in purchasing, whom he constantly encouraged and sought to imbue with something of his own faith and enthusiasm for their chosen field. He was impatient only of the inertia that stands as a bar to more rapid progress, but he accepted this as a challenge for redoubled effort. His particular interest was the annual "Purchase for Profit" issue of PURCHASING, which was largely his own creation. The presentation of the Industrial Marketing Award of Merit for Editorial Achievement, which he received at the 1951 N.A.P.A. Convention, was a well deserved recognition of this notable project.

The familiar figure of George Henry and his camera will be missed where purchasing men gather. His important contributions to progress in purchasing will live on, and benefit all.



## *Two kinds of service — both important*

# Shall Purchases Be Made from MANUFACTURER or from DISTRIBUTOR?

By Frank Curran, Purchasing Agent, S. Blickman, Inc., Weehawken, N. J.

**H**ERE'S a straight-from-the-shoulder statement of one purchasing agent's views on a question of vital and perennial interest to every buyer and every sales organization. It carries additional impact because of the fact that it was originally prepared for and presented at the annual tubing sales conference of Carpenter Steel Company. In addition to its specific answers to the problem under discussion, it contains some trenchant comment on the practical meaning of that much abused word—Service.

for me?" It's as easy as that! The firm that can do the best job for me and for my company gets the orders.

When I buy a product, I buy more than the commodity—I buy quality, price, and service.

Everyone knows what quality is. Quality is whatever you are selling at the time.

Everyone knows what price is, too. Price is what the other fellow always seems to have better.

Service is what everyone says he has but no one ever completely delivers. Service means quick, courteous and intelligent use of phone and mail. It means careful handling of inquiries. It means the ability to give accurate price and delivery quotations quickly. It means more than telling me you are out of my size; it means offering alternates to the size or grade I want, and telling me when my size is expected. Service means watching my orders carefully, so that I will get them on time. And if I can't get delivery when promised, service means telling me about it beforehand, and not waiting until I find it hasn't come in. Service means having what I want when I want it!

### **Customer vs. Prospect**

One question that I've never had satisfactorily answered is this: Why is it that a prospect is so much more important than a customer? It has become a pet peeve of mine.

As a prospect, you are an important guy. You are buried in literature, catalogs, price lists, market analyses and technical data, and are promised everything under the sun. You are wined and dined, coaxed and coerced, beguiled, badgered, bullied and beaten, until you finally break down and place an order.

Now you are a customer. As such, you are turned over to the tender mercies of "the organization". Somewhat to your surprise, they have never heard of you! The Order Department wants to know who you are and where you do business. As a prospect, your credit standing has been above reproach, but now that you are a customer, the Credit Department wants a financial statement, two bank references, and four commercial references. If you cross all these hurdles successfully, you may find out that it was all a mistake—there was an error in the stock list and the item you want is not available after all.

How often is a hard-won customer lost because someone wrote the factory for important information instead of telephoning, and someone else neglected to answer the letter promptly! Or because the Advertising Department forgot to notify customers as well as prospects that they had a new product, or a new price, or a new process. Or even because the Credit Department decided that they must stand firm on a matter of high principle in settling a discrepancy of \$1.27.

**W**HEN does the purchasing agent buy direct from the mill, and when does he buy from the warehouse? And why?

No one purchasing agent can presume to tell you why buyers act the way they do. Probably no two buyers are alike, any more than any two salesmen. We may, and undoubtedly do, react in different ways to the same situation. However, I think that each of us is governed by a general set of rules. Mine can be summed up very simply. When I greet a salesman and ask, "What can I do for you?", I really mean, "What can you do

This is the fault of "the organization". But the salesman is to blame, too—because he thought his job was finished when he landed the account. He forgot that his main job is working for his customers. It is my firm conviction that if the average company would spend half as much money, time, and effort in keeping their customers happy, as they do in trying to get new business, both they and their customers would be much better off.

I have lifted the following description of the customer from a piece of sales literature which recently crossed my desk. If it sounds "corny" to you, remember how much "corn" there is in political speeches—and how often we wish that the politicians would live up to the sentiments of their "corny" phrases. Here it is:

Notice the mention of "profit" in the last line. It does pay off.

I can sum up my own definition of service by saying that it means working for the customer—not part of the time, or most of the time, but all the time.

#### Distributor Service

Now what has this to do with placing orders with the mill or with the jobber? My answer is the same as before. The group that can do the best job for me gets the orders.

I have a rather old-fashioned conception of the function of a steel distributor. To me, he still fills the position of a stocking jobber. That is what I use him for, and as such he performs a very useful function. I count on him for quick deliveries of small lots, and I will give him mill business when, as a result of

need it, he wouldn't be looking for it. The size or dollar value of the item is no indication of its importance. Purchases have to be kept in balance with needs. It often happens that a very small item has an importance far greater than another item which has considerably more weight or higher dollar value. Taking a list of seven items, six amounting to 50 pounds or less and one of 5,000 pounds, a higher service score would be given to the warehouse which could fill three of the six small items than to the warehouse able to furnish all of the large item and none of the small ones. To my mind, carrying a diversified stock is the prime function of the steel jobber. The same principle would apply to warehouses in other lines.

When the warehouse becomes a manufacturer's agent, it is my opinion that it competes with, rather than represents, the mill. In such cases, I consider the warehouse as a middleman, and I don't like to do business with middlemen.

#### Mill Service

Our warehouse purchases are frequent, varied, and important. Our mill purchases, being larger, are of correspondingly greater importance. Now, why do I deal with the mill? Because I feel safer when I am dealing with headquarters, and in the long run it is easier for me. Working through a middleman, I would not be entirely satisfied. I would always feel that I should go over his head to the mill and get my information at first hand.

I feel safer in dealing with the mill because I know where my business is placed. I placed it there. The mill is selected with my interest in mind, not the interest of the jobber. The mill representative to me represents one source and one product. I expect him to be familiar with my problems in manufacture, in packing, in material handling, and in storage. I expect him to keep me informed of market conditions and new alloys. He must look out for my interest on the items which are of prime importance to me. My particular requirements are important to him when I am his customer. I don't believe that any jobber representative, even with the best intentions in the world, could do as good a job for me.

So, in the final analysis, I place the business where, out of my experience, I feel that I am doing the thing that will make life easier for me, while at the same time buying for my company what we pay for—quality, price, and service.



"I could give you exceptionally fast delivery on this order, Mr. Blimp."

**What is a customer?**

**A customer is the most important person in this business.**

**A customer is not dependent on us; we are dependent on him.**

**A customer is not an interruption of our work; he is the purpose of it. We are not doing him a favor by serving him; he is doing us a favor by giving us the opportunity to do so.**

**A customer is not an outsider to our business; he is part of it.**

**A customer is not a cold statistic; he is a flesh-and-blood human being with feelings and emotions like our own.**

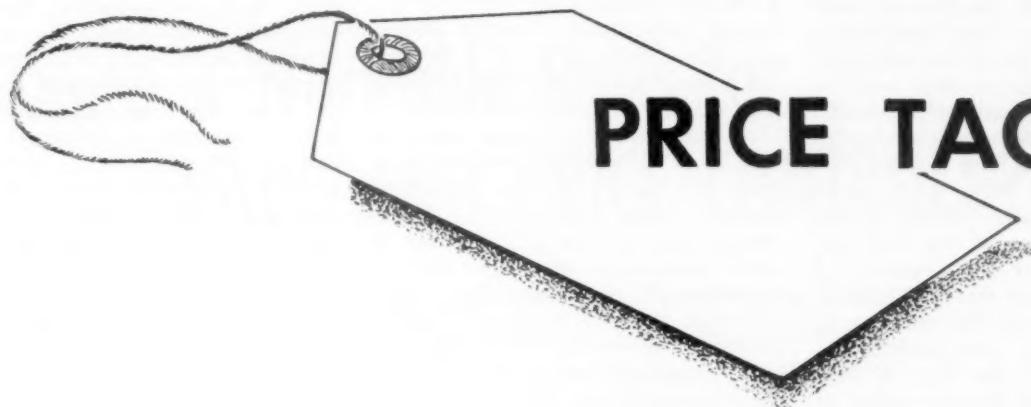
**A customer is a person who brings us his wants. It is our job to handle them profitably both to him and to ourselves.**

forward commitments for larger quantities, he can give me better delivery than I can get from the mill.

Many warehouses, bedeviled as we are by shortages, priorities and allotments, have apparently taken the easy way out by concentrating on quick turnover items, forgetting the adage of the old-time Yankee peddler, that "You can't do business from an empty wagon." You wouldn't continue to trade with a shoe store that was always out of your size, nor with a drug store that expects to have aspirin next week when you have a headache today. How can the jobber expect a buyer to continue calling when he is always "out of stock"?

Every item on the buyer's shopping list is important. If he didn't

*Security, complacency, riches, reputation—all have their*



## PRICE TAGS

• By Fred G. Space, Purchasing Agent, The Seymour Mfg. Co., Seymour, Conn.

**PRICE** is one of the purchasing agent's measuring sticks of value, and circumstances have made many of us careless in its application to the things we buy. A thoughtful purchasing man projects this philosophy to encompass the prices we pay in setting and striving to attain our goals in personal, business, and national life.

Everything in life has a price tag attached to it. Borderline policies and questionable practices on the part of a buyer may develop lower competitive prices, but the advantages gained are inherently short-lived. It may result in a temporary market advantage, but at the same time establish misleading costs which cannot be maintained, and the result is embarrassment and loss. John Ruskin observed long ago: "The common law of business balance prohibits paying little and getting a lot."

Good will is a two-way thoroughfare, and makes happy motoring for both the buyer and the seller. To place it in jeopardy is always poor business. An inferior product which carries the appearance of quality may find a ready sale, but it is a foolish buyer who would repeat the purchase.

Many things are over-priced. This is particularly true during a period of material scarcity. It then becomes a case of "I need it and you have it; so let's not be too critical of the price." Should you endeavor to unravel and track down the case history of the product which impresses you as having a fictitious value (or, more accurately, too high a price) you might find yourself involved in a commercial labyrinth as confusing as an oriental bazaar. As a matter of fact, it is not worth the trouble. The best corrective is not to buy such a product, or just as little as possible to meet an emergency need.

One of the many splendid house organs reaching my desk is

"Through the Meshes". A recent issue has this to say about prices:

A fact that most people don't know, or dislike to admit, is that under our present system of free competition, the equivalent of a public auction is being held every hour of the day and every day of the week. Except for a few items of sentimental value, every bit of property and every item of food or wear is for sale—including the Empire State Building, which changed ownership not long ago.

Under this system the public gets what it wants at the price it is willing to pay. If one purchaser charges too much and his sales fall off, a competitor will charge less and take the market away from him.

No other system is so elastic, and no other system caters so precisely to the whims and needs of the mass of people.

A free market is an essential part of our way of life. It supplies what is wanted, where it is wanted, at a price that insures continuous production."

Buying low and selling high has produced many a fortune. In recent years, high taxes—just short of being confiscatory—have made that practice somewhat less popular. As an industrial buyer, whose experience covers two world wars, plus the immediate present (which is closely akin to a third such crisis), one is tempted to believe that for altogether too much of that period, values—as such—have gone

PRICES and the manners or methods of pricing are always matters of concern. Price controls may offer a formula, or free enterprise in a competitive world may set the pattern, but the impact of price touches everyone, everywhere.

The implications of price run the gamut of basic ethics, to shrewd and relentless dealings in the market place—from true values to the cynical and somewhat tawdry verb that tells us all men have their price. The price of a thing is what the seller asks for it. It can be a very personal matter, reflecting such diverse human traits as generosity or greed, thrift or wastefulness, honesty or corruption; all have relation to price.

out the window.

With no facts in my possession other than from my own experience and many discussions with other buyers, it would appear that for many years there has been a definite trend away from speculative purchasing, at least in the industrial field. Such a practice does have its effect on prices and price trends.

Many times I wonder where price levels would be, had we not engaged in World War II, followed within such a brief period by the dissipation of our goods and resources to bolster the economy of much of the rest of the world. Since 1945, about 10% of the revenue of the United States government has been given out in the form of gifts or loans to other nations—some of it to nations who are now hostile to us. A good heritage is something of which to be proud, and we might well ponder the sort of economic heritage that we are passing along. Note, for instance, an increase of approximately 1000% in our national debt in 30 years, and little to show for it in the way of peace in the world or sincere friends. It remains for generations yet unborn to accept that price tag and to balance the books.

One writer has indicated that "instead of facing realities, much of our leadership seems to have their heads in the clouds." It behooves us to cross examine our day dreams and to remember that government benefits of every kind carry a price tag. Oppressive labor practices place a premium on mediocrity. Too much leisure exacts its toll and complacency occupies the seat once held by initiative. All of these are the prices we pay for indifference, instead of doing a bit of crusading for our beliefs and convictions. Perhaps it results from the attitude that there is nothing we can do about it anyway.

Is there any emergency which justifies the exorbitant price we pay for airfields in North Africa, which do not even become our property? Are mink coats such a badge of distinction and affluence that men will betray a public trust in order that their families may be thus arrayed? The factors which outweigh the price in such matters are, at best, somewhat obscure. It's a simple maxim not to buy at too dear a price. In the realm of conduct there are some who covet so much that they will pay a great price, all they have, only to find that it turns to ashes.

Those who are surfeited with possessions find it difficult to appre-

ciate the true relation of price and value. Fortunate is the seller who numbers such among his customers, even though to the more discriminating it creates a false market. Time and patience are the most effective correctives. Francis Bacon says that "Fortune is like the market where, many times, if you can stay a little, the price will fall."

As many a buyer knows, much of our most important purchasing is done in a rush, which in itself frequently exacts a penalty. As a young man, I was a buyer for a small department store; have always remembered the proprietor's observation that many times the most profitable purchases were the result of just browsing through the market place. Coverage, as we think of it, is most difficult when time alone is the essence. The opposite of superficiality is thoroughness, and the buyer who cultivates that trait or attribute finds ultimately that he is doing just what comes naturally. It may be an occasional irritant to some who rarely find themselves in need until they are completely out but the practice itself pays dividends.

We are told that a good name is more to be desired than great riches, but a good name itself may bring profit. What's in a name that insures a good price? Other things being equal, you place your orders with the concern that possesses those priceless ingredients of honor and integrity. Riches comes to those who have made such the cornerstone of their business.

Eternal vigilance is, without doubt, the price of liberty, and the same might be said of success in the business world. "Let the buyer beware" is still a timely admonition, and its observance is still excellent discipline. Some one has said that the buyer needs a hundred eyes, the seller but one. However, there is much honor in business today. Industrial leaders were never more conscious of their social responsibility. Salesmen are better trained, and this is also true of merchandising agents. It is rarely that your faith in the people with whom you deal is not respected and justified. Fine phrases and honeyed words are not just intriguing sentiments eloquently expressed at banquet tables. Business and industry as a whole are undergirded with right principles. Robert Browning says, "Progress is man's distinct mark alone." A certain amount of progress may be born of natural causes or of necessity, but it is man's creative urge—a compelling desire to

explore and to achieve—which accounts for our greater strides in better living.

All progress is at a price. Achievement in itself may bring discontent rather than real happiness. Spiritual progress alone holds the greater promise of serenity and contentment. The size of a man's estate is not alone the measure of his worth. It is the practice of our trade journals to note the passing of leaders in their respective fields. Observe if you will that relatively few have had a meteoric rise. One gains the impression that most successful men have been builders, stone upon stone, or as the prophet says, "line upon line".

Each generation provides new leadership, sounds a new challenge, and assumes new responsibilities. It is constant change that sets the tempo of our progress. It is young men who establish new goals and who are in no way deterred by precedent. The price they pay is outweighed by the thrill of striving, by the rewards that enterprise alone can bring.

Time changes many things, and ultimately makes all things clear. This is why history is such a great teacher. It is in the light of the record that we learn the price of achievement. The past three decades have witnessed the expenditure of astronomical sums for the sinews of war. During that same period, the automobile has become as commonplace, and almost as necessary, as the houses in which we dwell. Those sinews of war have preserved us as a nation, and the automobile has extended our horizons. Both, however, have carried a high price tag in lives and property.

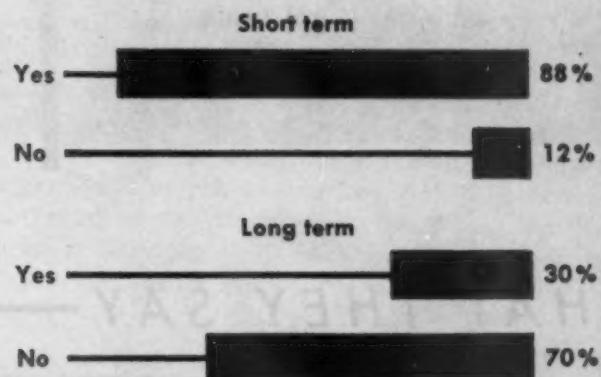
Every week there come to my desk messages delivered by industrial leaders, which are considered of sufficient moment to justify their wide distribution. It augurs well for the future that so often the emphasis is on the importance of prices and values, of leadership responsibility that looks over and beyond the profit motive. The rewards of tomorrow are closely related to a growing recognition of spiritual values.

The privilege of living in a great Republic, the privilege of Free Speech, Freedom of Worship, and the Freedom of Action that we call Free Enterprise—all carry a price. Regardless of our ideals and purposes, we all lack perfection. It is striving that counts. As one business man has so effectively stated, "Faith in God makes up for the deficiencies in our own resources."

# Is There A Workable Basis for WAGE AND PRICE CONTROLS?

With the advent of a new administration in Washington, there has been increased talk of the possibility of relaxing or removing wage and price controls. Such a move, however, would leave unsolved some of the basic problems existing in an economy dominated by dangers of war. Measures must still be available to prevent runaway inflation in the event of extreme emergency. But what represents an emergency, and what kind of measures should we have available to meet it? Here, purchasing agents in all parts of the country have given their collective opinion on the control problem generally, and some of the proposals for dealing with it.

① In your opinion, will the lifting of all price and wage controls have inflationary results



② If you believe that selective controls are needed, in what areas do you think they should be retained



Slightly over 22 % indicated they think some selective controls are needed. Items on which controls are favored were named, in order of preference, as follows: basic war materials or strategic and defense-related materials in short supply (including chemicals, non-ferrous metals, and certain steels); rents; food and sustenance products; wages; defense orders; transportation.

③ Do you believe that an equitable system of stand-by controls could be devised, with the government given authority to re-impose controls in case of an emergency without the legislative and administrative delays that occurred in 1950



PURCHASING OPINION

④ Do you believe that a "steady rise in living costs" should justify price and wage controls

?

⑤ Do you favor price controls calculated on the basis of industry profit levels

?

⑥ Do you favor a general wage control policy tied in with increases and decreases in living costs, as provided in the General Motors contract

?

⑦ Do you favor a general wage control policy tied in with increased productivity, as requested by the United Textile Workers' union

?

Yes ————— [REDACTED] 44%

No ————— [REDACTED] 56%

Yes ————— [REDACTED] 21%

No ————— [REDACTED] 79%

Yes ————— [REDACTED] 54%

No ————— [REDACTED] 46%

Yes ————— [REDACTED] 30%

No ————— [REDACTED] 70%

## —WHAT THEY SAY—

"Wage increases based on productivity can only be frauds. Productivity of workmen fluctuates according to the number seeking employment."

"Believe any plan for economic stability must apply equally to wages and prices. We can't have stifling controls and taxation on business with government, at the same time, supporting and encouraging labor's demands for steadily increasing wages and benefits."

"Believe that a controlled plan of inflation must be accepted as a necessity to bear the tremendous public debt as a result of ungoverned spending of the Roosevelt-Truman administration and World War II. But we must do all possible to contain this inflation and work to a levelling-off."

"Labor is entitled to share in increased profits due to increased productivity and technical advances, but wages tied to cost of living is most equitable way of doing this with minimum disturbance."

"With the present scarcity of materiel, controls are absolutely necessary in order for small business to survive."

"Suggest we stand by for conclusion on this matter (of controls) by the experienced and more fully informed men with whom the new administration is consulting and surrounding itself."

"The present price and wage controls have merely been used as a political football and have not been of much value in stopping inflation. Except in cases of emergency, supply and demand will control prices."

"Wage controls are ineffective inasmuch as you cannot force a man to give you a good day's work at a price other than he bargains for. Without wage controls there cannot be effective price controls. You cannot control prices without controlling quality—and so on."

"Don't believe any system would work while labor unions have more power than the government. An effort should be made to protect unorganized groups."

"Government spending will control all prices either directly or indirectly. Control government spending and you automatically control prices by creating a competitive market."

## Purchasing Management— Whither Bound?

● By Stanley E. Bryan

DURING the first half of this century, we have seen the growth of centralized purchasing and the recognition of the purchasing agent as an executive of considerable stature. The importance of any individual today, in periods of high prices, scarcities, government controls, and economy drives, cannot be emphasized.

The very fact that the public and the executive branches of government have been interested in investigating the function and performance of governmental buying, through the studies and reports of the "Hoover" staffs, indicates recognition of the importance of purchasing and the purchasing agent. The public purchasing executive's place and function have been strengthened by these reports.

When a job is thus critically examined, it is on the assumption that the work is *essentially right*, though some things about it may need correction or improvement to make it *better*. The investigator's function is that of a trouble shooter. This has been the basic philosophy of the Hoover staffs, at both the national and the local level; and it should be remembered that these studies covered not only purchasing, but a wide range of governmental activities. The original "Hoover Commission" was set up at the federal level of government, and its studies proved to be of such value that various states followed a similar procedure by setting up "Little Hoover Committees" to study the functions and activities of state government.

Purchasing agents in government, as in industry, have been doing an increasingly competent job. Yet their responsibilities are growing so

**THE HOOVER REPORTS** on governmental purchasing found many points on which present practice could be improved, but the very fact that this function was deemed worthy of such close study is evidence of its fundamental importance and essential rightness as a part of governmental activity. On the basis of these widely publicized recommendations, which should be regarded as troubleshooting rather than criticism of present methods and personnel, the author projects the larger concept of purchasing as a comprehensive responsibility for supply and materials management, which is inherent in the Hoover reports. This paper was originally presented at the second annual Municipal Purchasing Conference at Ann Arbor, Michigan. The principles expressed are equally applicable to purchasing in the industrial field. Dr. Bryan, formerly Professor of Management at Michigan State College, is now teaching at the University of Washington.

---

rapidly that they find themselves in somewhat the same position as Alice in Wonderland. "Faster, faster!" cried the March Hare. "But the faster I run, the more nearly I stay in one spot," Alice protested. "Then if you are going to get anywhere," said the Hare, "you'll just have to run *faster than fast*." And that is merely to keep abreast of the job and its demands.

### **Purchasing is Management**

A recent survey of what purchasing executives really do, showed that at least 50% of their time and much more than 50% of their energy is spent on administrative,

as distinct from functional, activities. They are managers as well as buyers.

Management is the art and science of planning, organizing, and controlling the men, materials, and means of accomplishing objectives, economically and effectively. Management must accomplish the objectives in such a way as to create the maximum good for owners, employees, and public alike.

If there is a sense of responsibility, a group of men with common problems, and a science for coping with those problems, there is the foundation for a profession. Purchasing executives surely have a

sense of responsibility, common problems, and a desire to make their work a profession. Let's see whether they have a science of management that can be applied to their activities.

Management, in almost every field, is to a great degree dependent upon psychological factors. But as a part of the science of management, purchasing also has a kit of fundamentals, or tools. The progress it makes in the future will be based largely upon its recognition of its tools and its skill in applying them. We are living in a jet age, and radar has replaced the sounding ropes and poles of the days when the call "Mark twain!" was heard on the river boats of the Mississippi. The Hoover reports were pointed at improving the use of these fundamentals under modern conditions.

### Open the Tool Kit

Let's open our bag and take a quick look at our tools. Don't relax while they are being listed. Just because you recognize their names doesn't mean that you are using them. You may be using some of them skilfully, but not others. The "Hoover Commission" people tried to determine which tools could be better used. Here they are:

1. Objectives
2. Decisions
3. Personnel
4. Physical Means
5. Procedures
6. Coordination
7. Underlying Philosophy

Before taking these up in detail, let's remind ourselves that our imagination and ideals determine to a great extent how effective our planning or creative thinking will be. Although it takes effort, we can switch our minds from reverie to reflective and constructive thinking if we have the will to do so. We can also determine the kind of thoughts we think. We can think good thoughts, bad thoughts, little thoughts, big thoughts. The great works of the world—the San Francisco Bay Bridge or the Empire State Building—were at one time only ideas. So it is with ethical ideals.

Recently, PURCHASING Magazine asked its readers some questions on the state of business ethics. More than half of the respondents felt that there had been a general deterioration in ethics. The greatest percentage felt that the reasons for this revolved around inability to do business by normal methods, and the influence of laxity in other

phases of national life.

A few bad apples can spoil a barrel. In unscientific sampling, a few bad apples may give disproportionately bad indications, far above their actual numbers. Senator Williams, the man who became famous for exposing thefts in the Revenue Bureau, made it a point to emphasize that his investigation could not have succeeded without cooperation from the great majority of people in government service who have high ethical ideals, and live up to them. If government service doesn't bring proper prestige to the individual involved, we will always find a percentage who will make up for a lack of honor in their job by indulging in unethical practices. Perhaps that's true of purchasing generally, too.

Although the Hoover reports did not specifically mention ethical

what they stand for. Federal purchasing is too far away. To most of us it is manned by "men without faces". But here in Michigan, for example, if some person were to question the ethics of Stan Bien or Phil Anderson, or any of the other men working with them in the State Purchasing Division, we'd know it just wasn't so. Why? Because we know them, and we know and accept the code of ethics to which they subscribe. We know them as members of N.A.P.A., a professional organization striving to raise the level of purchasing practices.

In general, ethical ideals are the work of many people pulling together. There are three possible approaches in using this tool of purchasing ideals. You might have such high ideals that you would have to withdraw from your activities because you couldn't agree with



ideals, they did imply some consideration.

The Hoover report on Federal Supply says (p. 25): "Purchasing requires a high degree of professional competence, yet many purchasing offices are not manned with competent personnel."

The "Little Hoover Report" on Michigan's state purchasing says (pp. 22-24): "The effectiveness of any purchasing division depends upon the quality and integrity of its buying organization. Michigan has equipped itself with a staff of buyers who have become specialists in their fields. . . All of the buyers have been properly classified in the positions they hold and perform duties consistent with the classification."

If any conclusion can be drawn from these statements, I would say that it principally consists of knowing the men in the profession and

existing practices. On the other hand, you might take the attitude that you will accept whatever the present practices are, good or bad. That is sometimes called the "practical" attitude, but the really practical approach is the third—to accept the present standard of ethics with reservations, working with other men of similar ideals to constantly improve them. Are you using your collective organizations most effectively to this end?

### Purposes and Standards

Our intelligence and our purpose will determine how good our organizational structure will be.

The Federal "Hoover Report" implies (p. 25) that one of the major weaknesses of Federal purchasing is that there is no central body to delineate the purposes for which purchasing activities exist. In the case of the State of Michigan,

the "Little Hoover Report" (p. 25) found the purposes of the State purchasing function to be well defined, by listing a dozen such purposes. The one exception seemed to be that the Purchasing Division was not given the objective of inspecting incoming materials to see that they were the materials specified.

A recent study by a group of Stanford University research people indicates that one of the weaknesses of some of our top management people is that they spend too little time examining the purposes for which they are organizing their men, materials, and methods.

Once the proper objectives have been established, our judgment—in conjunction with established standards—will give us a logical basis for control. Standards are necessary to make judgment effective.

There are standards for all phases of managerial duties and means. Some have not been sharpened as well as they can be. There should be a constant re-examination of standards and the use of standards. We are all aware of the materials and engineering standardization program and what it has accomplished in the way of better physical specifications and less duplication and waste. Remember, however, that there are also standards for the following:

1. Standards of service (including ethical criteria)
2. Standards of organization structure
3. Standards of procedure
4. Standards of physical nature (including equipment, lighting, and layout)
5. Standards of personnel (including morale)
6. Standards of performance

The matter of personnel standards was reflected in the Federal Hoover Report as follows (p. 36): "Although purchasing is a highly skilled profession that requires intimate knowledge of trade conditions and markets, salaries paid in government agencies are inadequate . . . (and) personnel processes fail to make proper acknowledgment of the skills required."

Improper knowledge of the skills and aptitudes needed, and improper selection of persons who are neither good on their present jobs nor eligible to promotion to other jobs, create frustrated individuals who can become chronic trouble makers and impair the service to be rendered.

Physical standards were men-

tioned in the Little Hoover Report, as follows: "The development of uniform state-wide standards has been a slow process in Michigan. It must be remembered, however, that this section has only one engineer and is just scraping the surface of a time-consuming job. Where standards do not exist, the buyers have been required to develop their own specifications." Among the recommendations is the establishment of "An official committee or board of standardization . . . supplied with a staff of technicians to standardize, wherever possible, the materials used."

The Federal Hoover Report recommended (p. 46): "A specifications unit . . . to serve as secretariat for a coordinating body . . . on Federal specifications . . . approve Federal specifications and recommend policies and procedures . . . governing their preparation. (To judge products by) maintaining a master list of qualified products . . . which meet Federal specifications."

Performance standards were mentioned in both reports, pointing out the need for appropriate statistical and other analyses.

### Summary and Forecast

In summarizing the use of objectives as tools of supply management, we must recognize that objectives have a planning phase, an organizing phase, and a control phase. Objectives are brought into being by ideals, purposes, and standards. The development of objectives indicates a definite use of imagination, intelligence, and judgment. Objectives allow us to cut through the non-essentials. In the aggregate, such objectives will give a clue to the answer to the question, "Purchasing and Materials Management—Whither Bound?"

The recommendations which were reviewed by the Advisory Panel of the staff which examined the purchasing function in the State of Michigan touched upon many related functions and responsibilities.

It was the general belief of the Advisory Panel that merging the Surplus and Disposal Section with the Commodities Distribution Section would make for better coordination of the flushing out of excess and obsolete stock. My own point of view has long been that *surplus and disposal* is a major function of materials management, and if possible should be recognized as a definite entity.

Recommendations were made for the establishment of an inspection

service and an official committee or board of standardization. The consensus of the Panel was that such a committee or board would give status to standardization activity.

It was recommended that approval of printing contracts be transferred from the State Administrative Board to the purchasing division. Purchasing is a technical field; so is printing. The purchasing division can do a more competent job on technical matters than can a board.

Matters of procedure coming under review included the sending of purchase order copies to receiving departments, and further study of a vendor's standard invoice, to be produced at the same time the purchase order is typewritten.

The staff investigators felt that six employees in the traffic section, as compared with an equal number of buyers in the procurement section, indicated over-emphasis on traffic matters. My own opinion is that the number of employees is not the significant criterion. The significant fact is that a traffic section can reduce costs by competent aid in routing, in checking transportation rates charged, and in securing better rates from the ICC on State business. In my philosophy there is a definite place for traffic activities as long as they "pay their way".

An entire group of administrative recommendations, the Panel felt, were within the province of the purchasing director to decide for himself.

Based on the range of these findings and recommendations, I can make a forecast for the future. I see the broadening of *purchasing* activities into a group of *supply* activities, under the direction of a top-notch executive. We might refer to him as the Materials Manager or Director of Supply. His division might be made up of the following departments:

Purchasing and Follow-Up  
Inventory Control  
Value Analysis and Research  
Conservation and Surplus Disposal  
Traffic  
Stores

Administration, Records, etc.

The purchasing director of today will be a man of much wider managerial activities tomorrow, and to the extent that purchasing men are assuming these coordinative responsibilities, I believe they are leading and shaping a trend which is gradually changing the entire supply organization in industry.

# How Many Lives Has A Factory Tool ?



Chrysler Corporation's simple rule for avoiding wasteful purchasing: Don't buy a new tool if you have a discarded one that will do the job, or a worn tool that can be reconditioned to meet the new requirement. The company has 100,000 examples to prove that there's useful second life in many a worn or obsolete item.



Time to retire that drill? Maybe not, says the economy-minded Non-Productive Material Control Department, with a keen eye for possible "second life". Stock rooms for obsolete tools, like this one at the Dodge plant in Detroit have been the source for filling many factory requisitions.

**S**MALL tools are generally recognized as expendable items, but to "expend" them while they are still capable of useful service—perhaps for a service other than that for which they were originally purchased—adds unnecessarily to the purchasing task and budget, and can represent a substantial waste.

At Chrysler Corporation, more than 100,000 factory tools headed for "retirement" have been put through a reconditioning process in the past year to extend their useful lives several times beyond normal,

thus cutting costs while at the same time conserving vital metals.

There is nothing revolutionary about the methods of salvaging, reclaiming and reconditioning worn tools. The important thing about Chrysler's plan is the way in which it has been organized so as to permit the application of these methods and to effect the resulting savings on a company-wide basis.

The program is carried on by the Non-Productive Material Control Department. Worn-out screw drivers, drills and cutting tools that

have become obsolete or non-standard through changes in design or production methods, and thousands of other "tired" tools that have completed their stint on production lines, are returned to this department. If there is a possibility of putting them in condition for further use, they are classified and routed to the long rows of stock bins in the department.

Second step in the procedure is the routing of all tool purchase requisitions through the department before passing them along to the

purchasing office. By a careful screening of these requisitions, the accompanying blueprints or specifications are checked against tools in the obsolete stock bins. If an obsolete tool can be reworked to meet the blueprint specifications for not more than half the cost of the new tool, or if an obsolete tool formerly used for another purpose will fit the new job, it is supplied to the requesting plant, and the new purchase is avoided.

During the course of a single year, 70,000 separate items were supplied to plants from obsolete tool stores or surplus stocks held at other plants. Another 3,600 were reworked to fit new specifications. Savings ran into thousands of dollars. In another separate operation, 24,000 grinding wheels were either reworked to provide fresh surfaces or substituted for other functions.

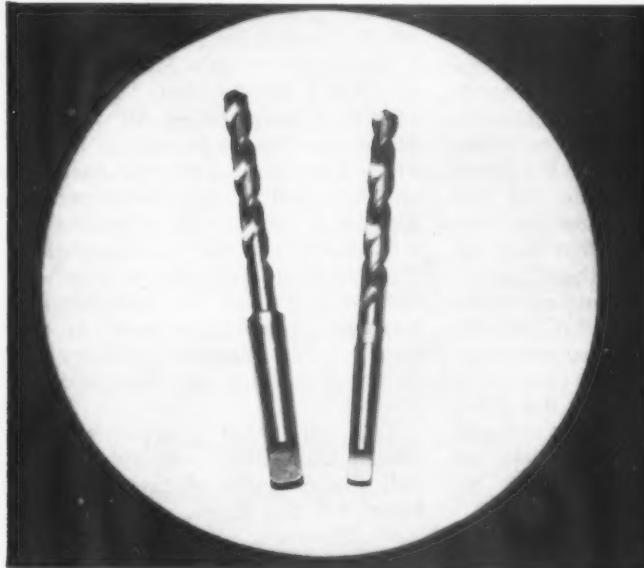
One typical example is the 9/16" drill which is reworked to 1/2" to meet other specifications, or an old drill work too short for its present job but which can be resharpened and used again on another assign-

ment where less length is required. In other cases, the stubs of solid carbide turning tools were saved from scrappage by brazing on a steel shank, restoring the tool to its original length. The changing of contours of worn or obsolete cutting tools for new use is commonplace.

The activity of the department extends beyond in-plant requirements. Instead of reissue to other departments, many obsolete tools are sold to Chrysler suppliers who can use them effectively in their operations for the production of parts purchased by the company.

The process is not an endless one,

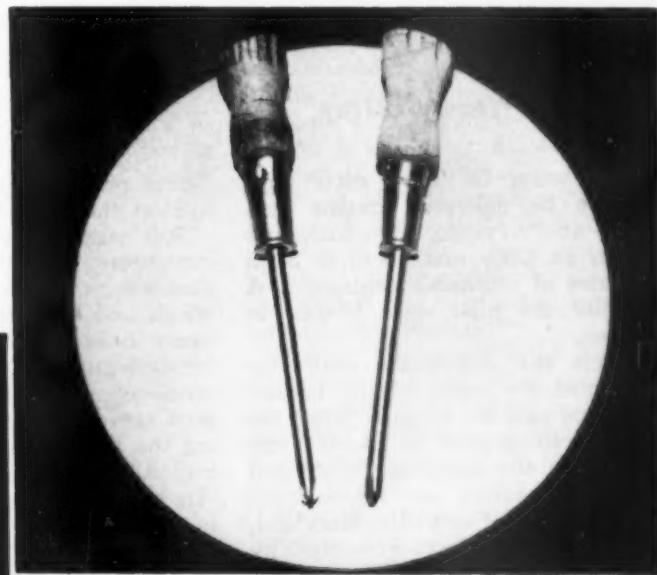
of course. Tools which are broken or worn beyond repair or reclamation, and obsolete tools for which no further utilization seems possible, are turned over to the By-Products Department for disposal as scrap. Here they are spark tested by experienced workmen to determine the type of metal, for separation into 25 different classifications, permitting systematic scrappage and maximum realization on scrap sales. Last year, some 788,000 pounds of worn-out tools were so disposed of, but not before it had been certified that their usefulness as tools, rather than as scrap, had been fully utilized.



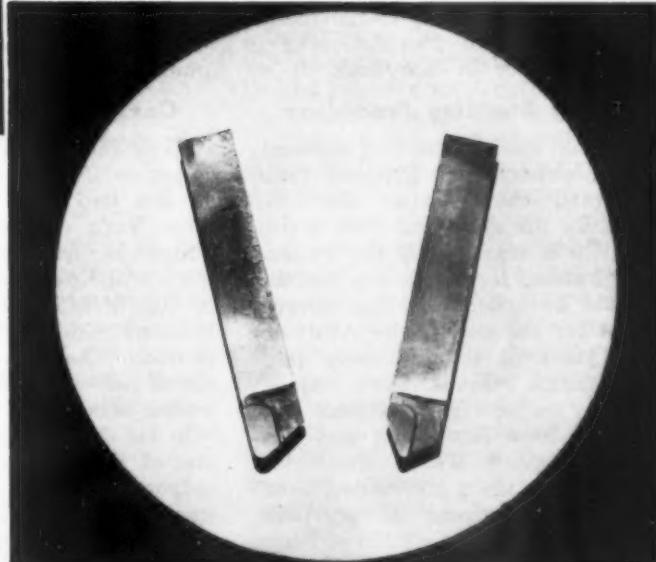
▲  
The drill at left is obsolete, being of a type no longer required, but the shank can be reworked to smaller size, like the one at right, to fit a new purpose at half the cost of purchasing a new tool.



►  
A design change rendered the cutting tool at left obsolete, but a minor change in contour will adapt it to the new requirement. Short stubs of carbide tools are given a new lease on life by brazing on steel shanks to original length.



▲  
Simple tools like screw drivers can be salvaged easily and economically. The worn screw driver at left is no longer usable in its present state, but it will be resharpened like the one at right, yielding another full service life.



## When Goods are Lost in Transit

.... The legal principle is well established and litigation usually centers on the question of actual title at time of loss

By Albert Woodruff Gray

**A**N order for terra cotta pipe, to be delivered freight prepaid, at Perryville, Maryland, was given an Ohio manufacturer by a District of Columbia contractor. A few of the pipe were broken in transit.

From the invoice the contractor deducted the value of the broken pipe and paid the balance. When the manufacturer sued to recover this deduction the purchaser contended that his contract was for delivery of the pipe at Perryville, Maryland, and that the pipe represented by the amount of this deduction had not been delivered.

The underlying principle, said the District of Columbia court in denying the manufacturer's claim, is the old and familiar proposition that loss or damage in transit usually follows the title. The title of this terra cotta pipe was in the manufacturer until it was delivered to the purchaser in Maryland.

### Long Standing Precedent

An old and outstanding authority is a decision of the Supreme Court rendered shortly after the Civil War. In the spring of 1860 a contract was made with the Federal Government for all the supplies that should be ordered by the government for the use of the Army for two years at some military posts in Arizona. Goods were requisitioned under this contract and shipped from New York and Boston to Lavaca, Texas. From that port the goods were routed overland to the Arizona military posts. At Rio Hondo, a little town in Texas, these supplies were seized by

Texas rebels fighting at that time against the United States.

Suit was brought by this army contractor against the United States for the value of these goods which had been lost by capture. It came before the Supreme Court for determination in 1868. One sentence of that decision has since then served as authority in charging the loss or damage of goods in transit to either the buyer or seller. "He had agreed to deliver the goods in Arizona, and until he did this there was no contract on the part of the government, either express or implied, to pay for them."

A reference to that long ago decision by the District of Columbia court in this recent case, was supplemented with, "Where the contract requires delivery at the point of destination, title usually remains in the shipper and the risks of transportation must be borne by him."

### Construction or Delivery?

Even before that decision of the Supreme Court, however, this rule of law had been adopted by the New York courts in deciding an action brought against the New York and Erie Railroad for the loss by fire of fifteen lumber cars constructed under a contract with the railroad. The cars had been completed but were still with the contractor when they were destroyed.

In its decision that this was the loss of the contractor and not the railroad the court said, "The contractor agreed to build for the railroad fifteen lumber cars from materials to be furnished by him. This

was in effect an agreement for the sale of the cars and did not vest any property in the railroad until the cars were completed and delivered. The rule is that the party in whom the title to property is vested must bear the loss in case of destruction by accident."

The court in this Maryland case concluded its decision, "The merchandise was ordered for delivery at the purchaser's job site at Perryville, Maryland. The manufacturer was required to ship the merchandise by freight to the purchaser by a carrier to the point of destination. This language indicates an intention that property in the merchandise was not intended to pass to the buyer until physical delivery at point of destination was accomplished."

This pipe that was broken in transit from Ohio to Maryland was still the property of the manufacturer, not the buyer. As it was the manufacturer's property its destruction was his loss. The rule is simple: *he who owns the property, his is the loss*. But in its application, finding the real owner is frequently as difficult as in the doggerel of a once popular novel, recently revived as a radio serial:

"We seek him here, we seek him there,  
Those Frenchies seek him everywhere.  
Is he in heaven? Is he in hell?  
That demmed elusive Pimpernel?"

### Delivery to Carrier

In contrast with the action involving the Maryland shipment of terra cotta is a Texas contract for the

purchase of machinery. This was in part, "Vendor: Browning Ferris Machinery Co. . . . Guaranteed Contractors Equipment, Houston, Texas. Order No. —, Charge to H. E. Fitzgerald, P.O. Address, 209 Tenth Street, Ballinger, Texas. Ship to same."

Of this contract provision for shipment and of the point at which title to the machinery passed to the buyer, the Texas court said:

"The provision that the machinery was to be shipped by freight to Ballinger, Texas, brings the case within the well established rule which may now be regarded as elementary, that where goods are shipped in conformity with a contract or with an order to a buyer, the property in the goods generally passes to the buyer and delivery to the carrier is said to be delivery to the buyer."

The difference between the contract in this instance and that in

transportation to Jersey City, there to be delivered at the piers of the Central Railroad of New Jersey for transportation to Coatesville.

The bill of lading was, "Received from Troy Furnace Company at Troy, New York, on board barge *Mary Glen*, seven hundred and fifty-one and forty-five hundredths gross tons (751.45), more or less, Champlain Basic Pig Iron. Consigned to Lukens Steel Company, Coatesville, Pa., via Barge of Murray Transportation Co. to Central R.R. of N.J. Piers, Jersey City, N.J., for Reading delivery."

The following morning the scow, in tow of a tug, careened and dumped its cargo of pig iron into the Hudson River. The controversy between the buyer and seller over the payment for the iron centered in the ownership of the merchandise at the time the barge capsized.

"It is well settled in the law of sales that the title does not pass in

they see fit not only as to the place of delivery but supplemental conditions affecting such delivery.

A steamship, the *John Jay*, was undergoing repairs and refitting at a wharf at East Boston, Massachusetts. Stored on this wharf was considerable heavy marine hardware and machinery, a heavy condenser weighing several tons, boilers and a steampship propeller. Four bronze blades, each weighing two and a half tons were bolted to this propeller shaft. Two spare blades, also a part of the propeller equipment, were not on the wharf. These extra blades were, however, included in negotiations made for the purchase of a portion of this equipment that were later confirmed by letter from the ship owner to the buyer.

"This is to confirm our verbal understanding of the sale to you for the lump sum of three thousand fifty dollars, 6 bronze propeller blades, 1 condenser ex *S.S. John Jay*, as is and where is, on our wharf at 336 Border Street, East Boston. It is understood that you will remove the four propeller blades from the present hub, leaving the hub and nuts intact, same to remain our property."

Five or six weeks later, before the equipment had been removed by the buyer, the wharf collapsed and the condenser and propeller blades sank deep in the water of the harbor.

The two spare propeller blades, however, had never been delivered at the wharf by the seller but had remained at the Bethlehem Shipbuilding Works and were still there when two years later an action, brought to recover the \$3,050 that had been paid by this disappointed purchaser for goods he had never received, was tried before a Massachusetts court.

In affirming the judgment awarding the buyer a refund of the \$3,050 he had paid for this equipment, the Supreme Court of that state said,

"The contract being for the sale of specific articles for a single sum, was entire and not separable. The contract plainly required delivery to the purchaser by the seller on its wharf. Title did not pass until the goods were on the wharf. Two propeller blades not only were not on the seller's wharf but were in the possession of the Bethlehem Shipbuilding Corporation."

This seller had not fulfilled its contract. The goods had not been delivered to the wharf and the loss occurring through the collapse of the wharf rested on the seller who

(Please turn to page 318)

## REFERENCES

Secor v. Charles H. Tompkins Co., 45 A.2d 117, D.C.

Grant v. United States, 7 Wall. (U.S.) 331

McConihe v. N. Y. and Erie R. R. Co., 20 N.Y. 495

Browning-Ferris Machine Co. v. Thompson, 58 S.W.2d 183, Tex.

Hickman, Williams & Co. v. Murray Transportation Co., 31 F.S. 820

Gordon v. American Tankers Corp., 191 N.E. 51, Massachusetts

Thunder Bay Quarries Co. v. Pollard, 3 N.W.2d 316, Michigan

Uniform Sales Act, Sec. 22

volving the loss of title in the shipment to Perryville, Maryland, is that the contract here is, "Ship to Ballinger, Texas." In the Maryland case the contract required delivery at Perryville, the point of destination.

A cargo of 75 tons of pig iron was sold a few years ago to the Lukens Steel Company, f.o.b. that company's plant at Coatesville, Pennsylvania. The iron was loaded onto a scow at Troy, New York, for

such a contract until the goods are delivered to the designated place. The difficulty that arises and frequently engenders litigation is the failure to clearly set out in the agreement the 'designated place,'" said the Federal Court, holding that the loss of this property was the shipper's.

### Incomplete Delivery

Parties to a sale contract, however, may make whatever provisions

*There's gold in them thar auctions*

## When Normal Supply Sources Fail

By Maurice Basescu, Purchasing Agent and Treasurer, Bassons Industries Corp., New York

SINCE I am about to make a suggestion that may sound batty, let me first demonstrate my sanity. I believe that there is nothing like having good reliable sources of supply to which you can go for your materials and equipment month after month, year after year. And my company, which molds and fabricates plastics products—everything ranging from display items to jet engine shipping containers—has its share of such steady sources. But between 1946 and 1950, when the materials and machinery situation began to be erratic, I had to spend an awful lot of time at my desk and phone, trying to jog them up and locate supplementary sources. Along came

- K (do you know where I can buy this?)
- O (we are Out of that!)
- R (no Rhyme or Reason for all these shortages!)
- E (will supplies Ever get Easy again?)

Direct action gets results. When supplies from normal sources seem to be going-going-gone, this buyer has frequently been able to fill his requirements by putting in a bid rather than asking for a quotation. It's not recommended as a standard purchasing technique, but it has been helpful in meeting an emergency. Warning: Addiction to auctions, like addiction to liquor or drugs, can be habit-forming. Keep your purchasing perspective, but remember that there are many ways of buying, is this author's advice.



Maurice Basescu

A (stocks of all kinds have gone AWOL again) and then our troubles really began—"our" meaning mine, yours, and all purchasing agents'.

I worked the telephone overtime and got nowhere. Oh we could get tools and equipment all right—if we waited 20 months for delivery. Other merchandise would be four to six weeks in coming. We could get in line on waiting lists. But we had urgent military orders to fill and couldn't wait. That meant farewell to the telephone; I had to get out and find new sources of supply—and fast.

That is where I began to go batty.

I turned to auctions. You will ask: can anything be more haphazard, less reliable, to keep an industrial concern going? And the question is entirely justified. But remember, I was desperate. And, as a matter of fact, there is another contributory explanation: I had been something of an auction addict for some time.

The only other defense I have to offer for this violation of purchasing fundamentals is—that it has worked! Right off, I read of an auction sale in Port Chester, N.Y., where a company by the name of Magnetic Motors was dissolving. I wasn't looking for motors or anything like that—what I needed was air presses and hydraulic equipment to handle some new work for which we were negotiating. I went to the sale anyway. To my utter amazement and delight, I found air cylinder presses of all sizes and a considerable number of air tools which were practically made to order for me. I bought the lot, months ahead of prevailing delivery dates from regular procurement sources, which enabled us to get into production two weeks after we received the contract. It was the first job we had done for this aircraft company, which rewarded our strenuous efforts by giving us additional business.

Among other materials our company uses in quantity is burlap, as a reinforcing agent for certain products. But burlap is also an important material for bag manufacturers, and it has been recurrently scarce over the last 10 years. One day I spotted an announcement by a salvage company which auctions damaged shipments for shippers and cargo companies, offering 12 bales of 40"-7½

oz. burlap—a total of 24,000 yds., and smelling to heaven from some chemical which had spilled on it.

For our purposes the smell was no drawback, because we encased the burlap entirely in resin so that the smell was not perceptible. But for the other bidders, who could afford to go up to 14¢ a yd., it was a deterrent. Only a few speculators dared make feeble offers, and I was able to buy the lot at \$26 a bale. The market value of burlap was then about \$340 a bale. Figure it out and you'll see that I saved \$3,768 at that auction.

Another time, when we were using cellophane tape in enormous quantities, a salvage company put up at

attended paid off. That hasn't been so. Let me tell one of my worst wild goose-chases as a sample of the disappointments one must count on in resorting to this unorthodox source of supply. This wasn't 15 or 20 miles away, in Port Chester or Long Island, but out in Kansas City, where, in the winter of 1950, the Reconstruction Finance Corporation sold off the Aireon Corp. To attend this affair meant flying 2400 miles both ways.

The thermometer stood at 30 below in Kansas City when I arrived. That was just about my temperature, too, as I looked at the very large air presses which had prompted me to make the trip and listened

materials, the bidding for 5,000 lbs. of phenolic and 5,000 lbs. of Lucite in sheet form was sky-high. This was at the height of the Korean War scare buying, when many plastics were in short supply or threatening to become so. The result was that speculators bid in the material at the full market price, for which I could have had it delivered at our plant in New York from the manufacturers themselves. I did not bid—I went home empty-handed.

Supplementing the auctions as an emergency source of supply, the classified ads in our local newspapers offering merchandise and machinery have also been helpful. Time and again I have picked up items which other people had no use for and which we were prepared to give our eye-teeth for—metals, plastics, cellophane, tapes, etc.

About six months ago, for example, a Brooklyn candy manufacturer in process of liquidation offered all sorts of labor-saving devices in such a classified ad. I was at the six-story plant bright and early next morning, and I bought, for a fraction of their cost, a 750-lb. die lifter (which they had used as a barrel loader), two hydraulic lifts with 25 platforms, 10 sections of 10-ft. metal roller conveyors, and a cloth belt conveyor 30 ft. long and mechanized. All this equipment was used, but in excellent condition.

When there were no ads offering things we were looking for, we have occasionally placed a classified ad ourselves. On one occasion a 2-line ad in the *New York Times* brought me a reply from an upstate manufacturer, who said that he had this item I had advertised for. He did have it, and I bought it—and something more. A man doesn't have to wear blinders, so while I was passing through the large shed in which it was stored, I noticed a large stock of wet and dry sanding belts. Although I had not advertised for them, it happened that I needed them, too, and the man I was calling on did not. I bought the thing I had originally come for, plus 5,000 of those belts, on which I saved \$1 each or \$5,000—on an investment of \$2.70 for the ad.

I have often had happy experiences in the 25 years I have been an auction-hunter, but it takes a lot of time and patience. And you've got to have the strength of mind to shake off the habit, because after a while it gets into the bloodstream, like horse-racing.



Here's some of the equipment acquired at auction by the enterprising Mr. Basescu when normal delivery schedules were too long to be of practical help. The assortment includes both standard and special equipment. It kept the plant running at a high rate throughout the postwar emergencies and enabled the company to take on additional business when capacity would otherwise have been overloaded.

auction a plant on Long Island. Among the diversified items on the block was 175 gross of cellophane tape, in rolls 792 in. long and  $\frac{3}{4}$  in. wide; it was then selling at about 40¢ per roll. I bought the lot for 2¢ a roll. Of course I was taking a chance on finding a solid mass of the material glued to itself, which would be unusable, but what were the odds? \$504—the cost to me—as against the market cost of the same quantity of material, \$10,080. I took the chance, and it paid off; the cellophane was good tape all the way through.

I would be dishonest, and discounting the intelligence of my readers, if I said that every auction I

to the bidding for certain plastics in which I was also interested. The fact that the machines were homemade did not in itself frighten me off, since we, too, had built our own presses for special jobs, bringing male and female dies together either horizontally or at any angle of the bed and air cylinder pressure head that might be arranged. But the Kansas City presses, also special-purpose machines, had the air cylinders set at four different angles to the bed. We did not require such a complex set-up, and to dismantle it and rearrange the cylinders would not have been economical.

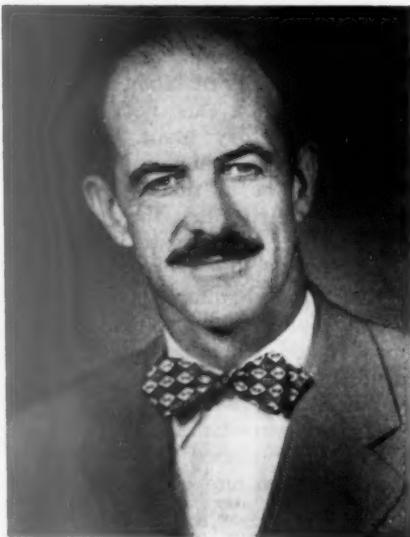
Therefore I did not even bid for this equipment. As for the plastics

*Typewriters are scarce in this department*

# A Purchasing System for 81,500 Active Stock Items

By George A. Fay

Director of Purchases  
Addressograph-Multigraph Corp.  
Cleveland



The Purchasing Department of Addressograph-Multigraph Corporation provides a daily demonstration of the accuracy and efficiency of the company's own products in the conduct of office operations. Ordering specifications for the thousands of purchased items are carried in plate form for requisitions and purchase orders; duplication processes eliminate a large part of normal clerical work, with uniformly legible copies and complete flexibility as to number of copies required.

BY way of introduction, a stranger approaching the home office and factory building of Addressograph-Multigraph Corporation in Cleveland, Ohio would find it hard to believe that the building was completed in 1932, at the very depth of the depression. This is indicative of the courage and foresight of the management of this corporation, which presently retains an advanced and progressive position in the office equipment field. In addition to the Cleveland plant, the corporation operates plants in Canada, England, France and Germany, each one of these plants being manned entirely by native personnel. The principal products are Addressograph, Multigraph, and Multilith Machines (and supplies), distributed through branches and agencies throughout the U.S.A. and Canada, and world-wide, through subsidiaries and foreign dealers.

In the pursuance of this business, it is necessary to carry approximately 75,000 parts in active inventory, and, in addition, 6,500 items of raw material, (castings, bars, etc.). The Purchasing Department reports to the Vice President in Charge of Manufacturing. It is headed by George A. Fay, as Director of Purchases. Mr. Fay recently succeeded S. H. Mansfield, who retired as the "Dean of Cleveland Purchasing Agents" after 45 years of faithful and outstanding service. W. E. Gombert is Purchasing Agent, and J. M. Fox, Assistant Purchasing Agent. There is a total of twelve people employed in the department.

It is much to the advantage of the department, as well as to the organization as a whole, that its own

equipment and supplies are employed in its systems wherever consistent with good business practice. Explicit information as to various uses is given as this article proceeds.

One of the Purchasing Department's responsibilities is the ascertaining and relaying to the Material Control Department the proper lead time for re-ordering production and maintenance items carried in stock. By allowing vendors the required lead time, the delivery required is obtainable on most all orders. Because of this cooperation no past-due orders are anticipated, and they are actually reduced to a reasonable minimum. The Material Control Department is responsible for the maintenance of proper inventory and for the issuance of request to purchase production materials. The same procedure is followed on maintenance items carried in stock.

Two copies of the purchase requisition (see Fig. 1.) are processed in the Material Control Department, using an Addressograph (Class 1900) with a seven-line Addressograph plate carrying the descriptive information. In case seven lines are insufficient, a second plate is used for the additional specifications. The information in the lower section is applied by the record clerk who orders the material.

All requisitions require the approval of the Factory Manager and the Treasurer before reaching the Purchasing Department. Approval of all requisitions by the Director of Purchases or the Purchasing Agent is also required, after which requisitions are divided among the buyers according to assignments

that have been made to each one. These assignments are included on a list for each individual buyer, with copies of these lists made available for plant departments, Material Control Division, Engineering Division, etc. These assignments are based on the buyer's proven ability to handle effectively the items in question, due to his knowledge and experience.

The requisitions are then processed for each buyer by his clerical assistant, and purchase record card (see Fig. 2.) is attached to each one. Beyond that point, it is the buyer's responsibility to edit all requisitions. The buyer obtains quotations, incorporates up-to-date price, recommends to the Material Control Department changes in quantity if advantageous, or suggests other alterations consistent with good buying procedure. The requisition is the master copy in the Department, and is filed numerically according to purchase order number which is applied. Any changes in specifications are subsequently incorporated on this copy.

After the requisition is completely processed and ready for writing, it is delivered to the order typist, who types all information on a Multilith Short-Run Master (see fig. 3.). From this Master, using a Multigraph Duplicator (Multilith Model 1250), the following copies (see fig. 4.) are obtained: White and Goldenrod, (mailed to the vendor, the white being the signed order for vendor's use, the goldenrod as an acknowledgment copy); Pink copy, (retained in Purchasing Department and filed alphabetically according to vendor then numerically

PURCHASE REQUISITION		
1	On Date June 2, 1952	Purchase Order No. F-574392
Address	John Doe & Co. 3572 Lester Avenue Cleveland, Ohio	Purchase Order Date
Terms of Payment	1% - 25th & 10th	FOB our plant
Ship via	your delivery	Route
Ship to	1200 Babitt Road, Cleveland 17, Ohio	
Quantity	PRICE	
4,000	6-32 X 3/4" FILLISTER HEAD MACHINE SCREWS, CUT THREAD, AS PER BLUEPRINT F2-7271 HERE- WITH.	
	6-24 per lb net	
DEPI. 211	ACCT.: 520-00	
On hand 1132 On order Date Required: 6/27/52		
3-Mos. Usage 300 Deliver to		
Charge to Account: Used for:		
Requested by Authorized by <i>W.W.</i> <i>W.W.</i> (Works Manager) <i>W.W.</i> (Purchasing Agent)		
Approved (Gen'l Foreman) (Treasurer)		
FORM 96-69 PURCHASING DEPARTMENT AND MATERIAL CONTROL		
Confirming? (Indicate ONLY WHEN order to be so marked.)		

2			PART NO F2-7271 ORDERING QUANTITIES	
CLE SCREWS	OPTION	6-32 X 3/4" FILLISTER HEAD MACHINE SCREWS, CUT THREAD, AS PER BLUEPRINT F2-7271 HERE- WITH.		
DEPI. 211	ACCT.: 520-00	LEAD TIME WEEKS		
DATE	ORDER NO.	QUANTITY	LIST PRICE	DISCOUNT
6/12/52	F-574392	4,000	7.21 lb net	1% - 25th & 10th
F.O.B. our plant				
No	VENDORS		VENDORS	
1	John Doe & Co.		5	
2			6	
3			7	
4			8	
Form 364-1150				

according to order number); Blue, Green, and Yellow copies, for the Receiving Department—the blue being their master and record copy, the green copy to accompany the material through the Inspection Department to the department ordering, the yellow to be forwarded to Accounts Payable Department after material is received, to support payment of invoice); and Brown copy, (sent to the department or store-room ordering the material, for reference purposes).

In case of partial receipts a hand written form is employed to support payment for portion received (see fig. 5.). Consideration is being given to the issuance of additional order copies with the idea of eliminating this hand writing. Any additional copies required for any special purposes can be added as white, or in other colors, when necessary. The

flexibility of the system is extremely advantageous, and the legibility of all copies regardless of number is of inestimable value.

A unique exception to the foregoing applies to orders for castings. These orders are completely processed without the use of a typewriter. Of course these are repetitive items where the specifications, to all intents and purposes, are constant. Since there are sufficient orders monthly to warrant it, the Multilith Short-Run Masters are pre-printed with the name and address of the vendor, f.o.b. point, terms, etc. The descriptive information is applied through the medium of an Addressograph plate, the order clerk inscribing quantity, usage, charge account, etc., by using a Multilith Reproducing Pencil. (See fig. 6.). The requisitions are processed by the established rou-



W. E. Combert  
Purchasing Agent

3

TS PENDING TRADE MARK

Multilith System Master

U. S. PAT. OFF.

6-12

Address

120

VENDOR:

John Doe & Co.  
3572 Lester Ave.  
Cleveland, Ohio

TERMS OF PAYMENT:

1/25th & 10th  
your delivery

SHIP VIA:

1200 Babbitt Road

Please acknowledge this order AT ONCE

(6,000) 6-32 X

Cut Thread  
with.Vendor shall not discriminate against  
Above material is subject to inspection

FORM 38-58 PRODUCED IN U.S.A. FROM A MULTILITH SYSTEM

A CERTIFIED PRODUCT OF

PURCHASE ORDER

Addressograph-Multigraph Corporation P-674392

1900 BABBITT ROAD CLEVELAND 17, OHIO  
TELEPHONE: REDWOOD 1-8000

DATE: June 12, 1952

4

VENDOR:

John Doe & Co.  
3572 Lester Avenue  
Cleveland, Ohio

WEO/q

TERMS OF PAYMENT:

1/25th & 10th  
your delivery

SHIP VIA:

1200 Babbitt Road

F.O.B.: our plant

ACCOUNT: 520-00

SHIP TO:

FOR DEPT: 211

DATE REQUIRED: 6/21/52

TERMS OF PAYMENT:

PACKAGES &amp; BOXES

MAIL ALL INVOICES DIRECT TO

ACCOUNTING DEPT.

PACKING LIST MUST BE ENCLOSED

WITH SHIPMENT.

TERMS OF PAYMENT:

1/25th & 10th  
your delivery

SHIP VIA:

1200 Babbitt Road

ROUTE:

ACCOUNT: 520-00

SHIP TO:

FOR DEPT: 211

TERMS OF PAYMENT:

1/25th & 10th  
your delivery

SHIP VIA:

1200 Babbitt Road

ROUTE:

ACCOUNT: 520-00

SHIP TO:

FOR DEPT: 211

TERMS OF PAYMENT:

1/25th & 10th  
your delivery

SHIP VIA:

1200 Babbitt Road

ROUTE:

ACCOUNT: 520-00

SHIP TO:

FOR DEPT: 211

TERMS OF PAYMENT:

1/25th & 10th  
your delivery

SHIP VIA:

1200 Babbitt Road

ROUTE:

ACCOUNT: 520-00

SHIP TO:

FOR DEPT: 211

TERMS OF PAYMENT:

1/25th & 10th  
your delivery

SHIP VIA:

1200 Babbitt Road

ROUTE:

ACCOUNT: 520-00

SHIP TO:

FOR DEPT: 211

TERMS OF PAYMENT:

1/25th & 10th  
your delivery

SHIP VIA:

1200 Babbitt Road

ROUTE:

ACCOUNT: 520-00

SHIP TO:

FOR DEPT: 211

TERMS OF PAYMENT:

1/25th & 10th  
your delivery

SHIP VIA:

1200 Babbitt Road

ROUTE:

ACCOUNT: 520-00

SHIP TO:

FOR DEPT: 211

TERMS OF PAYMENT:

1/25th & 10th  
your delivery

SHIP VIA:

1200 Babbitt Road

ROUTE:

ACCOUNT: 520-00

SHIP TO:

FOR DEPT: 211

TERMS OF PAYMENT:

1/25th & 10th  
your delivery

SHIP VIA:

1200 Babbitt Road

ROUTE:

ACCOUNT: 520-00

SHIP TO:

FOR DEPT: 211

TERMS OF PAYMENT:

1/25th & 10th  
your delivery

SHIP VIA:

1200 Babbitt Road

ROUTE:

ACCOUNT: 520-00

SHIP TO:

FOR DEPT: 211

TERMS OF PAYMENT:

1/25th & 10th  
your delivery

SHIP VIA:

1200 Babbitt Road

ROUTE:

ACCOUNT: 520-00

SHIP TO:

FOR DEPT: 211

TERMS OF PAYMENT:

1/25th & 10th  
your delivery

SHIP VIA:

1200 Babbitt Road

ROUTE:

ACCOUNT: 520-00

SHIP TO:

FOR DEPT: 211

TERMS OF PAYMENT:

1/25th & 10th  
your delivery

SHIP VIA:

1200 Babbitt Road

ROUTE:

ACCOUNT: 520-00

SHIP TO:

FOR DEPT: 211

TERMS OF PAYMENT:

1/25th & 10th  
your delivery

SHIP VIA:

1200 Babbitt Road

ROUTE:

ACCOUNT: 520-00

SHIP TO:

FOR DEPT: 211

TERMS OF PAYMENT:

1/25th & 10th  
your delivery

SHIP VIA:

1200 Babbitt Road

ROUTE:

ACCOUNT: 520-00

SHIP TO:

FOR DEPT: 211

TERMS OF PAYMENT:

1/25th & 10th  
your delivery

SHIP VIA:

1200 Babbitt Road

ROUTE:

ACCOUNT: 520-00

SHIP TO:

FOR DEPT: 211

TERMS OF PAYMENT:

1/25th & 10th  
your delivery

SHIP VIA:

1200 Babbitt Road

ROUTE:

ACCOUNT: 520-00

SHIP TO:

FOR DEPT: 211

TERMS OF PAYMENT:

1/25th & 10th  
your delivery

SHIP VIA:

1200 Babbitt Road

ROUTE:

ACCOUNT: 520-00

SHIP TO:

FOR DEPT: 211

TERMS OF PAYMENT:

1/25th & 10th  
your delivery

SHIP VIA:

1200 Babbitt Road

ROUTE:

ACCOUNT: 520-00

SHIP TO:

FOR DEPT: 211

TERMS OF PAYMENT:

1/25th & 10th  
your delivery

SHIP VIA:

1200 Babbitt Road

ROUTE:

ACCOUNT: 520-00

SHIP TO:

FOR DEPT: 211

TERMS OF PAYMENT:

1/25th & 10th  
your delivery

SHIP VIA:

1200 Babbitt Road

ROUTE:

ACCOUNT: 520-00

SHIP TO:

FOR DEPT: 211

TERMS OF PAYMENT:

1/25th & 10th  
your delivery

SHIP VIA:

1200 Babbitt Road

ROUTE:

ACCOUNT: 520-00

SHIP TO:

FOR DEPT: 211

TERMS OF PAYMENT:

1/25th & 10th  
your delivery

SHIP VIA:

1200 Babbitt Road

ROUTE:

ACCOUNT: 520-00

SHIP TO:

FOR DEPT: 211

TERMS OF PAYMENT:

1/25th & 10th  
your delivery

SHIP VIA:

1200 Babbitt Road

ROUTE:

ACCOUNT: 520-00

SHIP TO:

FOR DEPT: 211

TERMS OF PAYMENT:

1/25th & 10th  
your delivery

SHIP VIA:

1200 Babbitt Road

ROUTE:

ACCOUNT: 520-00

SHIP TO:

FOR DEPT: 211

TERMS OF PAYMENT:

1/25th & 10th  
your delivery

SHIP VIA:

1200 Babbitt Road

ROUTE:

ACCOUNT: 520-00

SHIP TO:

FOR DEPT: 211

TERMS OF PAYMENT:

1/25th & 10th  
your delivery

SHIP VIA:

1200 Babbitt Road

ROUTE:

ACCOUNT: 520-00

SHIP TO:

FOR DEPT: 211

TERMS OF PAYMENT:

1/25th & 10th  
your delivery

SHIP VIA:

1200 Babbitt Road

ROUTE:

ACCOUNT: 520-00

SHIP TO:

FOR DEPT: 211

TERMS OF PAYMENT:

1/25th & 10th  
your delivery

SHIP VIA:

1200 Babbitt Road

ROUTE:

ACCOUNT: 520-00

SHIP TO:

FOR DEPT: 211

TERMS OF PAYMENT:

1/25th & 10th  
your delivery

SHIP VIA:

1200 Babbitt Road

ROUTE:

ACCOUNT: 520-00

SHIP TO:

FOR DEPT: 211

TERMS OF PAYMENT:

1/25th & 10th  
your delivery

SHIP VIA:

1200 Babbitt Road

ROUTE:

ACCOUNT: 520-00

SHIP TO:

FOR DEPT: 211

TERMS OF PAYMENT:

1/25th & 10th  
your delivery

SHIP VIA:

1200 Babbitt Road

ROUTE:

ACCOUNT: 520-00

SHIP TO:

FOR DEPT: 211

TERMS OF PAYMENT:

1/25th & 10th  
your delivery

SHIP VIA:

1200 Babbitt Road

ROUTE:

ACCOUNT: 520-00

SHIP TO:

FOR DEPT: 211

TERMS OF PAYMENT:

1/25th & 10th  
your delivery

SHIP VIA:

1200 Babbitt Road

ROUTE:

ACCOUNT: 520-00

SHIP TO:

FOR DEPT: 211

TERMS OF PAYMENT:

1/25th & 10th  
your delivery

SHIP VIA:

1200 Babbitt Road



O  
TE PENDING

TRADE MARK

Multilith Systemat Master PEG. U. S. PAT. OFF. 3-51

REG. U. S. PAT. OFF.

16

o

o

L

**PURCHASE ORDER**

*Addressograph-Multigraph Corporation* P 21591

**1200 BABBITT ROAD**

DATE

VENDOR: TAYLOR & BOGG  
1261 BABBITT  
CLEVELAND, OH

**TERMS OF PAYMENT:** NET 30 DAYS  
**SHIP VIA:** TRUCK  
**SHIP TO:** 1200 BABBITT

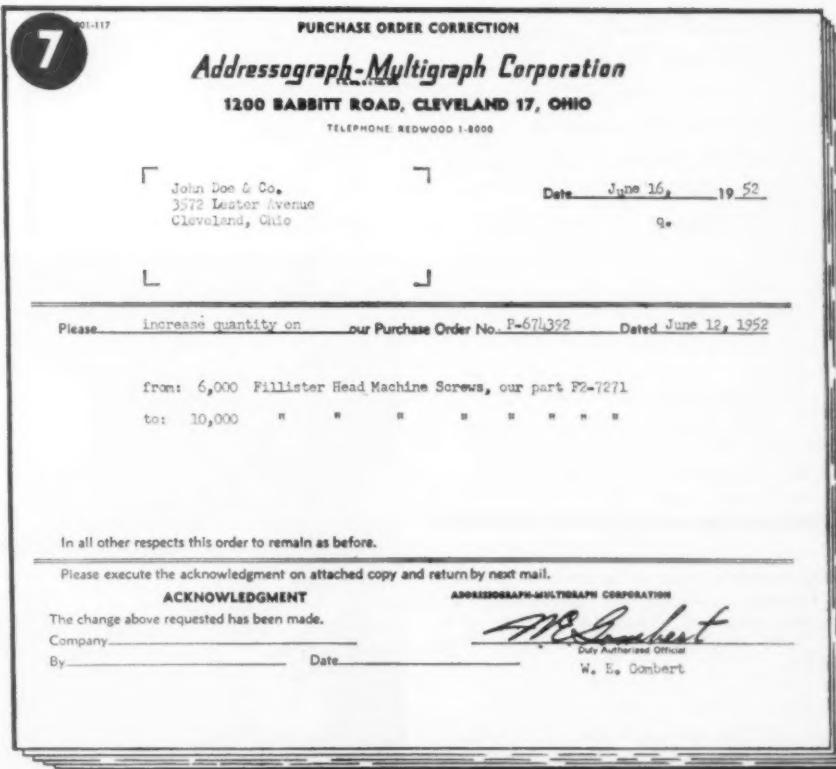
Please acknowledge this order A

HA-935 IRON CAS  
BRACKET

ACCT #0-500-00

past-due orders is supplied by the Material Control Department. This list is handled by the expeditor, who sends a follow-up form letter to each delinquent vendor, following it, in turn, by additional letters, telegrams, phone calls, and, where necessary, personal visits. By this means all orders which arrive on time or ahead of time do not require follow up, and considerable paper work is thus eliminated. An emergency list (see fig. 8) incorporating all urgent items (whether past-due or not) is employed to expedite urgent items and special orders. Items on the emergency list are handled by each buyer by telephone or wire, and results are reported to Material Control Department so that production may be planned accordingly.

A Cost reaction form (see fig. 9) is available to all buyers having been inaugurated about one year ago. While interested in reducing the price on items through competitive bidding, this group is more anxious to obtain cost reductions by ordering less expensive



8

992-32

SHEET NO.

UP TO AND INCLUDING Aug. 8th, 1952

SUPPLIER'S NAME	DATE ISSUED	P. O.	AMT.	AMT. RECD.	BAL. DUE	DU DATE	PART NO.	DESCRIPTION
John Smith & Company	5-22-52	P632117	5000	0	5000	7-23	26-1-3	Screw
W. Spear Company	6-15-52	P71,898	2000	1200	800	8-1	1340-21-56	Spring
Waltham Co.	4-30-52	P 75806	3000	0	3000	7-25-52	40-5221	Handles

9

Cost Reduction Record  
Addressograph-Multigraph Corporation

No. \_\_\_\_\_

Date Effective Aug. 1, 1952

Order No. \_\_\_\_\_

1. Part Number & Name: 56-4825 Spring
2. Description: Spring
3. Calculation:
 

Orig. Price \$15.00 M

Old Supplier Martin Spring Co.

New Price \$13.75 M

New Supplier Waving Spring Co.

Red. Per Unit \$1.25 M

Quantity (Annual) 200,000

Cost Equip. or other \_\_\_\_\_

Cost Red. (first year) \$250.00
4. Purchasing People Responsible: W.E.Gombert
5. Dept., or Storeroom Involved: Purchasing
6. Action Taken:

Approval \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

FORM 1271-12

A-M Corporation believes in its own products; the Purchasing Department procedures and forms are processed largely on its own equipment, with excellent results in departmental efficiency.

material where it can be satisfactorily substituted, by increasing the quantity or size of a package, by determining where carloads can be ordered in place of partial carloads, and by other similar means. Any changes in specifications or in the item to be ordered are made with the consent and approval of the Engineering Department, Factory Manager, or whoever in the organization is concerned with the particular item.

In the interest of good supplier relations it is the policy to see all callers, without exception. Sales people are asked to space their calls with a reasonable interval according to the importance of the product, and to other factors which may require more or less frequent visits. Satisfactory and pleasant relationships with suppliers are a constant aim.

A Buyers' meeting is held once a week to discuss mutual problems and to help one another in any possible way.



## Every Cost Is Too High

By James M. Berry, Purchasing Agent, Vick Chemical Company, Greensboro, N. C.

WHEN we think of buyer-seller relations, we usually refer to the opposite sides of commercial transactions—the supplier and customer in the identical sale or purchase. A great deal has been said and written on the subject—the necessity for mutual understanding and the interdependence of buyer and seller.

I'll get back to that phase of it, but first I should like to stress the relationship of the buyer with the "seller" in his own company. In other words, it seems to me more pertinent today for the purchasing executive to keep in mind and conduct his operations always from the viewpoint that his is the first step in the long process of producing and distributing his company's merchandise. He either is giving a strong impetus to the profit picture of his firm, or is seriously handicapping it and the ability of his company's sales organization in marketing the finished product.

I wonder how many sales departments today are telling their production and purchasing departments that the lowered prices at which they must sell demand that the costs of the product be brought down to maintain a profitable operation. Our sales division is doing just that, and it gives rise to my major obligation and responsibility as a purchasing agent. I must keep in mind the ultimate objective that what I buy has to be converted and sold by the sales department—and at a reasonable profit.

It seems to me that the crux of the buying job at the present stage of the business cycle is the question of price. Basically, I have liked to think of price as the resultant of the other factors of a purchase—quality, quantity, and service. By

Much present-day economic thinking is predicated on the premise that we are permanently committed to inflationary pricing, with a disastrous economic collapse as the only alternative. Every evidence from common sense and past economic experience is to the contrary. Increased cost of production does not necessarily increase value to the consumer. Inflationary pricing destroys markets.

Realistic pricing, based on the capacity to produce and the capacity to purchase and consume, can be the means of avoiding depression, and of establishing a new and healthy business balance, with higher standards of value. To accomplish this, we must accept the premise that costs are controllable within reasonable market pricing levels, and that they must be brought down by more intensively capitalizing on technological progress, increased productivity, and constant cooperation and service.

Here is a challenging and constructive area of cooperation between purchasing and sales—both in-company and in buyer-vendor relationships. The thoughts here presented were the basis of a talk recently given by the author before the Rotary Club of Charlotte, N. C.

service, I include such factors as having the materials available when they are needed—the reliability of delivery promise, and the scheduling and movement from the vendor's plant—resulting in the necessity for maintaining either large or small inventories at point of use.

Such a concept of price today seems a little too theoretical or academic. A great many businessmen, top management as well as both procurement and sales ex-

ecutives, are either too old or too young to remember competitive markets and the much more "normal" buyers' markets inherent in our mass production potential. There seems to be a fairly general acceptance of the idea that price should cover all costs plus a margin of profit for the seller. Nothing could be more fallacious, nor more indicative of 20 years' of indoctrination by economists of the social planners' school of once clear-think-

ing advocates of individual initiative and free enterprise.

Many businessmen today seem to incline increasingly toward the cartel principle, which certainly has been a major cause of the economic difficulties of England and the Continental European nations. While they protest government interference, some are quick to ask for help in price fixing and other monopolistic practices, and seem to be absorbing much of the socialistic and inflationary psychology of the economic planners.

I started purchasing during the 'twenties. It was the age of expansion of the automobile industry, the postwar development of the radio, the New Era technocracy, and finally, Profitless Prosperity—remember? It was the general belief in those days that a purchase was not successful unless made at a lower price than the last. After 20 years (maybe it's just a coincidence politically, but the fact remains that from the depth of the depression in 1932, there was only one way for demand and prices to go—up), I believe we are returning to a so-called "buyers' market", in which our expanded productive capacity results in such a tremendous supply that prices will have to be drastically and repeatedly reduced in order to strike a balance with demand.

I have little patience with the cry of sellers that they cannot reduce prices because "costs" are higher, citing principally increased labor rates and taxes. The incurring of costs does not necessarily add value (or price) to a commodity. Try shipping oranges or grapefruit from Florida to California if you wish to prove that truth.

Costs do constitute an important pricing factor, perhaps dominant on a rising market. On the other hand, during a declining trend, such as now is apparent (and to be expected over the next few years), prices tend to set costs—prices are reduced first, and it then is necessary to seek ways of reducing costs to validate the lower prices. In other words, the law of supply and demand ultimately will prevail in setting prices — despite escalator clauses, consent decrees, McGuire Acts, or Capehart Amendments.

Following 20 years of generally increasing prices, it seems axiomatic that almost every price is too high. As Bill Sredenscheck, who has had experience in positions of important responsibility in both the purchasing and sales divisions of the General Electric Company, recently

put it: "Every cost is too high, because it is of necessity made up of yesterday's ideas, materials, and processes. Throughout the country men in vendor companies, large and small, are developing tomorrow's ideas, materials, and processes, and these men should be ready to work on our jobs if Purchasing gives them the opportunity."

That is where the buyer can get together with the outside seller and obtain at an early stage in their development new ideas for his own company's engineering and production departments. Again keeping in mind his ultimate objective, the buyer also should keep his own sales department advised of new developments coming to his attention through suppliers contacts. Similarly, there is an equal obligation upon the sales executives to keep their own companies' buyers posted on new and better ways to old jobs or to satisfy human wants—arising from sales contacts with and demands of their customer buyers.

What determines whether a price is high, right, or low? It seems to me that it is the use to which the article is to be put, not its cost of production. Significantly, as pointed out by C. C. Watkins, Director of Purchases of General Box Company, in discussing the subject with 85 members of his company's nationwide sales organization, it may be that a purchase price is simply too high "to enable his own company's salesmen to maintain a good competitive position". It seems to me, therefore, incumbent upon the seller to insist in his own organization that his company's buyer seek lower prices for the materials, supplies, and services purchased to go into the makeup of the finished product he (the seller) is called upon to sell.

At least one prominent sales executive that I know has the right slant. I will not mention his name, because I believe he is entitled to whatever advantage of his competitors his early grasp of the realities of the buyer's market may bring him. He wrote me last month "we will hope to be able to find ways of cutting these costs" and "I believe that it is up to us to devise methods of running that will permit us to develop comparable costs on a first run."

It seems to me unthinkable for prices to be maintained at present levels. We all must re-orient our thinking about price. I think I can illustrate the difficulty by a recent experience with the sales represen-

tative of one of our suppliers. He came in all smiles and obviously pleased with himself to advise that in the quotation he was presenting his company had not had to increase the price from that charged us four months earlier. That is an example of inertia of price psychology, and looking at the situation from an inflationary viewpoint. How much better it would have been, and how much more chance of actually working costs lower, if the attitude of that supplier had been reflected in the salesman apologizing because he could not reduce the price.

Although the wholesale commodity price average has declined from the Korean War peak, it still is about 13% above levels in effect immediately prior to the outbreak of the War. By all previous standards, prices in effect in the spring of 1950 were at an extremely high level. With the tremendous increase in the productive capacity of our economy since the end of World War II, it certainly is unlikely that prices can be maintained at anythink like present levels. The sooner all businessmen accept this view and set about to correct the situation, the better chance of avoiding a repetition of 1929-32. The same complaints of high labor costs and vanishing profits were made in 1928. Let's hope we won't be so short-sighted again.

To summarize, it seems to me that the first and most important buyer-seller relationship is within an individual company. The day-to-day contacts of both purchasing and sales executives with the outside business community affords the opportunity of broadening the fund of knowledge and information necessary to keep a business enterprise abreast of our fast moving and ever changing economy. No matter how complicated or extensive the manufacturing or conversion process, or whether commodities or services are produced and sold, the buyer at one end and the seller at the other should get together and understand each other's problems.

If this is done, it is a foregone conclusion that the relationship between the seller and his buyer-customers on the one hand, and the buyer and his seller-suppliers on the other, will be mutually advantageous. I am sure that the seller no longer will berate the buyer for demanding lower prices, nor the buyer lose patience with the seller maintaining that he cannot reduce his prices because his costs are high or advancing. Let's get together and really understand each other.

*For service, safety and economy—*

## Select the Right Wire Rope Fitting

By **Walter C. Richards**, Chief Engineer, A. Leschen & Sons Rope Co., St. Louis

**THE AUTHOR** is a member of the Wire Rope Technical Board, which is composed of engineers and technical representatives from each of the wire rope manufacturers in the United States.

TABLE I

Fitting	Efficiency (Static Load)
Wire Rope Sockets (zinc attachment) . . . . .	100%
Compression Fittings (swaged or pressed) . . . . .	100%
Compression Sleeve Attachment (loop with or without thimble) . . . . .	100%
Wedge Sockets . . . . .	80 - 90%
Clips . . . . .	75 - 80%
Spliced-in Thimbles:	
$\frac{3}{8}$ to $\frac{5}{8}$ in. . . . .	90 - 95%
$\frac{3}{4}$ to $1\frac{1}{8}$ in. . . . .	85 - 90%
$1\frac{1}{4}$ to $1\frac{1}{2}$ in. . . . .	80 - 85%
$1\frac{5}{8}$ to 2 in. . . . .	75 - 80%
$2\frac{1}{8}$ in. and up . . . . .	70 - 75%

**E**ND attachments used with wire rope should be given careful consideration. There are a number of different types in more or less general use. All of these fittings have given good service in many kinds of applications, but some are better suited than others for certain operating conditions.

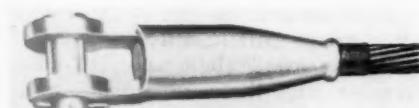
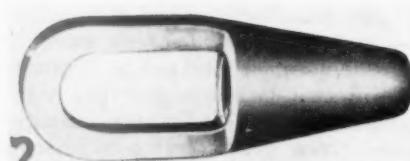
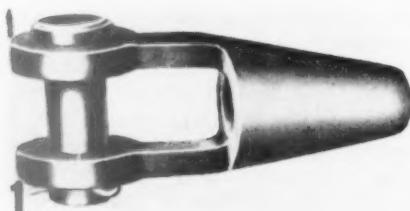
To select and use one of these end attachments intelligently, it is necessary to know their strength-efficiencies, and their advantages and limitations under various operating conditions. An understanding of these fittings and their features will result in safer and more economical service.

The listed efficiencies (Table I) refer to security of attachment only. They indicate the percentage of useful rope strength that may be expected, at the time of installation. To determine the available working load, the breaking strength of the rope, as listed in the manufacturer's catalog, is to be multiplied by the applicable efficiencies shown in the table before dividing by the selected design factor.

These static load efficiencies, however, do not reflect the effectiveness of the several attachments under all types of live loading in service. Table II indicates other characteristics.

TABLE II

Fitting	Strength	Resistance to Vibration and Variable Stress	Ease of Attachment in Field	Compactness
Sockets	Excellent	Poor	Fair	Good
Compression Fittings	Excellent	Good	...	Excellent
Wedge Sockets	Fair	Fair	Excellent	Good
Thimble Splice	Fair	Good	Fair	Fair
Clips	Fair	Good	Good	Poor

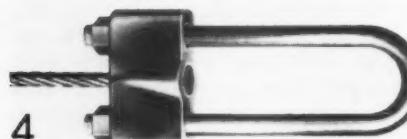
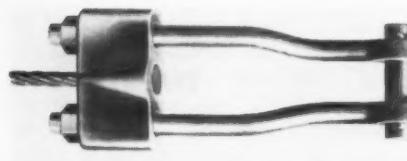


### Sockets . . .

may be either of the open (Fig. 1) or closed type (Fig. 2), having a tapered bowl into which the wire rope is secured with zinc. There is a "standard" design for 5-, 6-, or 8-strand ropes, and another with an elongated bowl (Fig. 3) designed particularly for high-strength strand. When attached according to the method recommended by the manufacturers, these sockets will hold the wires securely until the rope breaks.

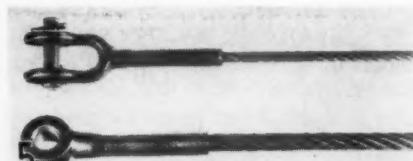
However, where vibration is present in service, this rigid attachment

acts as a sudden arrestor for the vibration waves and causes progressive failure of the wires close to the socket point. If the socket has been completely filled with zinc, many of the wire fractures will be found on the outside, but in some cases the breaks will occur within the socket bowl and the condition of the rope cannot be accurately judged by inspection. It is seldom convenient to attach these sockets in the field.



### The Bridge Socket . . .

(Fig. 4) is a variation of the preceding type. It is a heavy steel casting with a conical opening in the center and cylindrical holes on each side for bolts which secure the socket to its anchorage.



### Compression Fittings . . .

(Fig. 5) are attachments into which the rope is inserted and secured by cold flowing of the surrounding steel under heavy pressure. Here again, the properly attached fitting will hold securely until the rope breaks. All fittings of this type must be factory attached.



6

### A Wedge Socket . . .

(Fig. 6) has a flat, tapered hollow body. The rope is secured in place by passing it around a grooved, wedge-shaped piece of steel and drawing the rope and wedge down into the bowl. This type socket finds wide use, particularly on excavating equipment, as it has the advantage of being readily removable and may be re-attached easily in the field.

While this fitting will not develop the full breaking strength of the rope (due to a certain binding at the bend of the rope around the wedge), the ropes on which it is used are generally subject to rapid deterioration. Thus the weakest spot in the assembly would be somewhere along the rope rather than in or near the socket.

Vibration is also suddenly arrested by this socket, and progressive failure of the wires results, but it is not as severe as with the preceding types of fittings, and the wire breaks may extend over a greater distance.



### With Clips and Clamps . . .

the rope is passed around a thimble and the short end is clipped back on itself (Fig. 9). The number and spacing of clips should follow manufacturers' recommendations.



7



8

Clips are usually of the U-bolt and saddle type (Fig. 7). Clamps (Fig. 8) comprise a pair of steel castings or forgings with two grooves to match the diameter of the rope and fastened with three or four bolts. The rope is subjected to a certain amount of crushing in these fittings, clamps being a little the less damaging. There is also a tendency for the rope to slip through the fittings if they are not tightened up once or twice after the initial load is placed on the rope.

Advantages of such fittings are ease of application in the field, and the fact that vibration is dissipated gradually rather than suddenly as in the case of sockets. Progressive wire failures caused by vibration are not entirely prevented, however. Very severe conditions may result in broken wires under the first or second clip or clamp. In such cases, inspection is difficult.

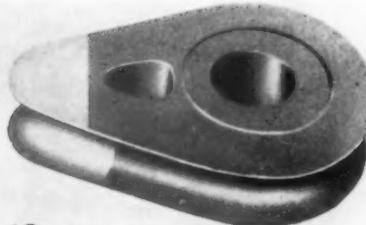


10

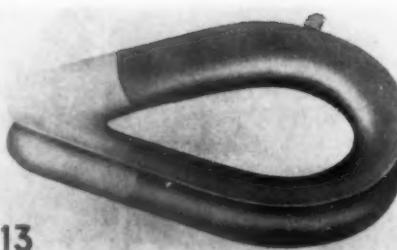
### Splices . . .

(Fig. 10) are sometimes used instead of clips or clamps for the same type of connection. The efficiency of the splice varies with the diameter of the rope, and in most cases is more efficient than the clip attachment. Spliced ends are the most effective in dissipating vibration, and are easy to inspect for vibration fractures or damage from any other cause. In general, splices must be made at the factory.

11



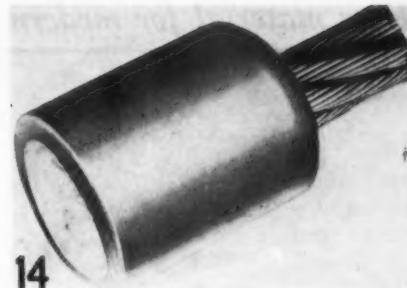
12



13

### Thimbles . . .

used with clips, clamps, and splices are of several patterns. Those most frequently seen are the "standard type" or extra heavy forged (Fig. 11), solid cast thimbles with pin holes for appropriate anchorage (Fig. 12), and heavy cast (Fig. 13) similar to the standard type and known as hawser thimbles.



14

### Ferrule Type . . .

ittings (Fig. 14), zinned on the end, are frequently used on logging ropes, in connection with a drop-forged hook, eye, or shackle type fitting. Ferrules may also be fitted with removable wedge inserts, corrugated to fit the rope.

### Other Types . . .

of fittings include some of special design, coming under the general classifications already noted. Some of them require special tools for application in the field. In addition to the conventional compression fittings, there are special metal sleeves for small diameter ropes, that can be compressed around the ropes by special hand-operated tongs. There are still other compression types that screw together or are hinged, and have a removable pair of liners corrugated to fit the rope.

Another type of fitting is the Shimble (Fig. 15)—a combination of shackle and thimble.



15

Certain end connections for small ropes are even made with a bent wire or rod, called a screw anchor. The rope is twisted around this bent rod and back on itself, forming a lock. A variation of this, referred to as a tail-rope hitch, is a forging with an eye or hook at one end, and grooved to receive a rope. The rope is passed around this grooved path in the form of a half hitch which holds itself under tension.

# How Powder Metal is Made

By **Samuel Bradbury**, F. J. Stokes Machine Company, Philadelphia

THE fabrication of parts from powder metal is gaining ever wider applications in industry, and the processes are fairly well known. Behind this process is a technology for converting solid metal to powder form, to make these uses possible. This technology is not so well known, yet an understanding of what is involved, and how it is done, is important to the intelligent purchase of this new form of raw material.

Four factors must be controlled in the making of powder metal:

1. Particle size. This is determined by sieve-analysis on the basis of tolerances as determined by random samples.

2. Apparent density. With iron, for example, the natural specific gravity is around 7.8; the apparent density of iron powder, correctly made, is 2.5, with a tolerance of plus or minus .05 grams per cc.

3. Flow rate. This property is comparable to viscosity, with established standards among powder metal users.

4. Chemical analysis.

Three major methods are used in converting metals to powder for use in powder metal processing; they account for about 90% of the powder metal production in the United States. There are other processes—such as the carbonyl process, grinding (for certain brittle metals), and diffusion—which have special but limited use. The major methods are as follows:

## 1. Atomizing

Atomizing is largely used for metals with relatively low melting points: lead, tin, aluminum, brass, and such. The metal is melted and poured in a thin stream. As it emerges from the nozzle, it is hit

with a high-speed stream of air, gas, or water spray. This creates a shower of tiny droplets which strike a collector as tiny solid particles of spherical or tear-drop shape. When they hit the collector they are cold and solidified—powder, in fact.

A variant of the process draws heated air and melted metal through

an atomizing nozzle of heat-resistant metal. Either is an economical way of forming powder metal. Neither is useful for handling metals in the higher melting range, for two reasons:

(1) The atomizing nozzle cannot be kept hot enough without melting;



Powder metal fabrication is a mass production process capable of high precision standards.



Typical machine parts formed of powder metal.



Pressing powder metal parts at the plant of Kwikset Locks, Inc., Anaheim, California.

(2) If the nozzle can tolerate the necessary heat, the powder so formed from metals of high melting point is in any case unsatisfactory.

## 2. Reduction

Reduction is the most widely used method. Copper, iron, and tungsten are commonly treated by

this process. Oxides of the desired metals are derived from ores by roasting, or by chemical means (as hydroxides from solution). These are then ground in a ball-mill to powder form. This is reduced to metal in a hydrogen atmosphere furnace.

Iron oxides, especially of Swedish

origin, are often heated in the presence of coal or coke. This burns out the air and creates carbon dioxide as a reducing gas.

Copper oxides are usually handled in trays in a hydrogen atmosphere at about 1500° F. The oxygen burns out and leaves copper particles. These are a loosely sintered cake as they leave the reducing furnace, but are easily broken and fall apart as powdered copper.

Iron, too, comes out in spongy form, but in grinding suffers work-hardening and may need annealing after the final grinding.

In any case, the powder—whether copper or iron, annealed or not—is now in the form of particles, each of which, as viewed under the microscope, resembles a little sponge. Such particles of reduced oxide knit well together and form a good mechanical bond. They are said to have good "green strength", i.e., good strength after pressing and before sintering.

## 3. Electrolytic Deposition

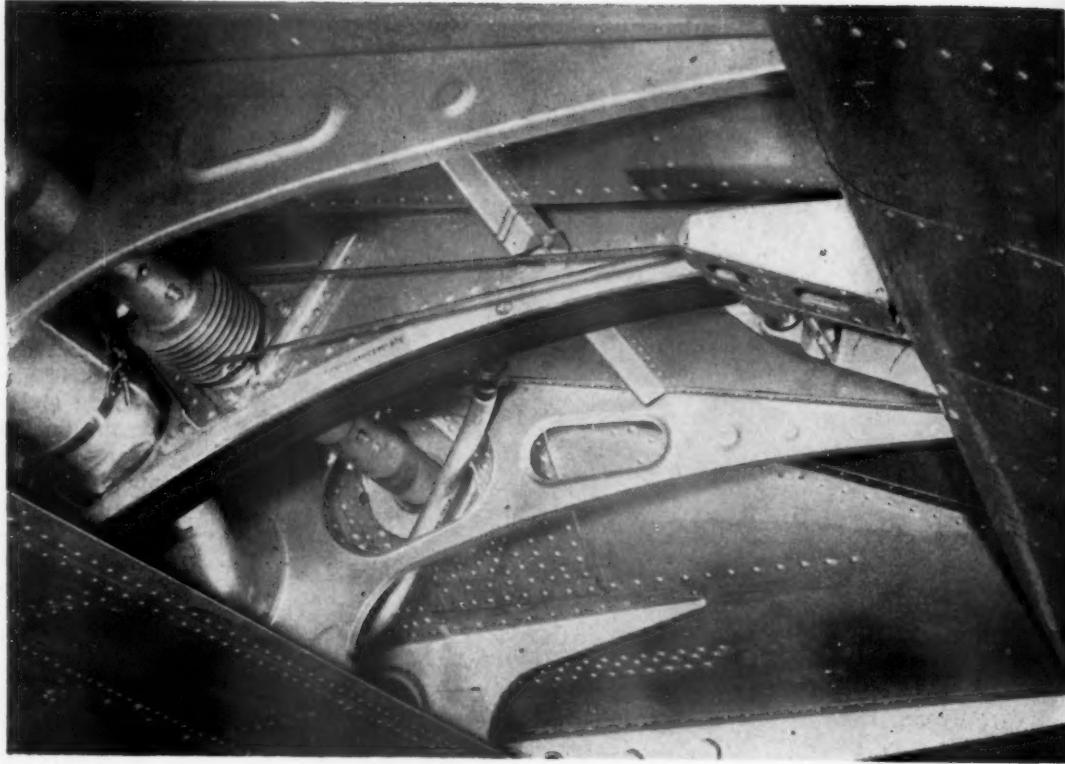
This process is used for many metals, but especially for iron and copper, and often silver. With respect to copper, the cost of the electrolytic and reduction processes is much the same, so that the buyer's choice often rests on considerations of delivery. With respect to iron, the electrolytic product is more expensive, but for some purposes is better. It is purer and softer, and is especially valued for electronic application where continuity of contact between chemically pure particles adds to conductivity, or where there is a need for high density of machine parts.

Electrolytic deposition is essentially the same process as electroplating. However, electroplaters seek a solid coating of pure metal, whereas powder metal makers want a spongy cathode. They use high amperage to create gassing and produce a powdery or brittle deposit.

Copper powder can often be mechanically vibrated from the cathode. Iron powder flakes off and requires a little grinding in a ball-mill. Powder metals made by electrolytic deposition—especially iron—often require annealing because the occlusion of hydrogen which occurs during active gassing may cause embrittlement of the metal particles.

## *It pays to keep on searching*

The dark curved section of steel in the center of this photograph is the flap track, as installed in an airplane wing. Part of the flap itself can be seen in the fully extended position, at right.



## The Subcontractor's P. A.

. . . . He can be a valuable and practical asset to the more glamorous purchasing organization of his customer — the prime contractor, as well as being a vital factor in profitable and efficient operation of his own company

**By George Hemerlein, Purchasing Agent, J. C. Peacock Machine Co., Los Angeles**

THE work of a purchasing agent for a subcontractor in the western aircraft industry today might seem to be a simple matter of buying pencils, letterheads, and paper clips; for in most cases the prime contractors, with their legions of highly specialized purchasing personnel, prepare our specifications, program our work, obtain our priorities, and frequently procure the materials and parts we require to turn out their work.

However, any firm that relies ex-

clusively on the know-how of its customers—whether in purchasing, engineering, or production management—for the direction and carrying out of its operations is a candidate for quick extinction. It may logically be questioned whether such a firm has any reason for existence in the first place.

Any conscientious and enterprising subcontractor must regard it as his primary objective to do the best possible job for the prime contractor, as for any customer. A

prime contractor's buyers, no matter how competent they may be, can't foresee everything that may affect the quality and cost of a vendor's products. And while they are doing everything possible to help their suppliers at present, we can be sure that a majority of their future purchase orders will go to companies that need the least help, or, better still, have demonstrated that they themselves can be of constructive help.

How did we "make the sale" that



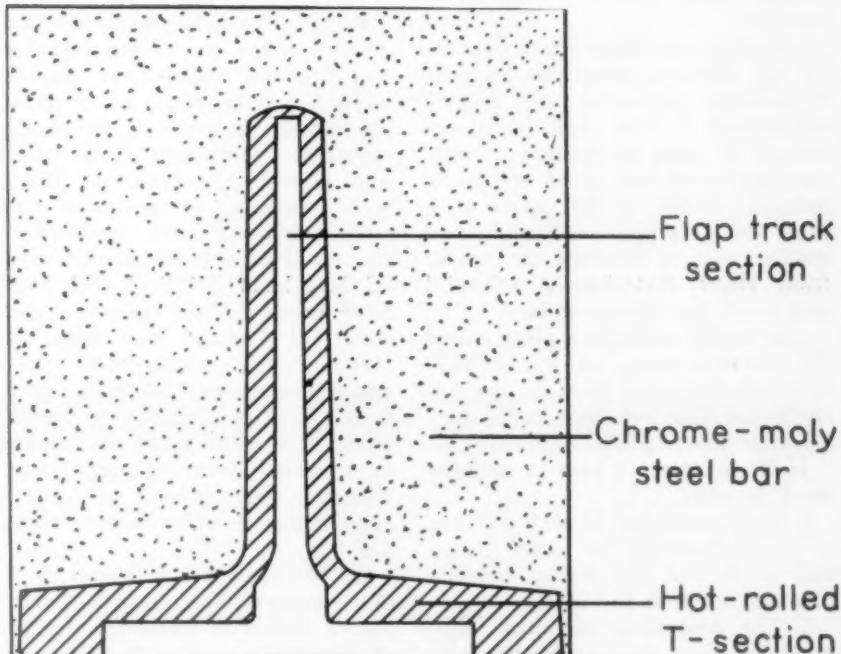
Machining from solid bar, as originally specified, represented 75% waste of material. Even more serious cost was represented by preliminary machining operations, which were subsequently eliminated, releasing plant equipment for other work.

won this customer and put us in the position of subcontracting on important aircraft orders? Surely there were other factors considered, and other assets to offer as a prospective vendor, than merely having certain machine equipment and capacity. One of these is a competent management organization. And we need to keep "selling" with service to retain these customers and to find new ones to keep our plant running if and when these particular contracts are terminated.

Therefore, it is the duty of the subcontractor's purchasing agent, as well as all the other members of the company, to help in the establishment of a performance record which will do most to assure the receipt of an abundant supply of orders in the weeks and months ahead.

How can that be done? The answer, in this writer's estimation, is to look for the money-saving ideas that the prime contractor's buyers have—for perfectly understandable reasons—missed.

A striking example of how this can be done was recently experienced at J. C. Peacock Machine Company as the result of negotia-



Cross-section of finished flap track, with the raw stock from which it was fabricated under the two methods, graphically shows savings of metal and labor resulting from change in material and procedure.



Flap track machined from hot-rolled T-section, which made possible substantial savings in both material and labor.

tions with Consolidated Vultee Aircraft Corp.

Convair wanted us to produce a batch of flap tracks for their Model 340 airliner. Flap tracks, as illustrated in the accompanying photographs, are the steel components that support an airfoil known as the "flap", which is moved in and out of the trailing edge of an airplane wing so as to increase lift or reduce speed during a take-off or landing.

It would have been a simple matter to fabricate these tracks with specialized extrusion or forging equipment if they had been required in mass production quantities. But since they were needed in batches of 200 or 300 parts at a time, the only practical production method was to machine the tracks from stock materials—a wasteful and costly procedure at best.

Our initial production plans called for the machining of  $2\frac{1}{4} \times 3\frac{1}{4}$ " chrome-moly steel bars to produce tracks of the required cross-sectional pattern. This involved:

1. The cutting of bars to suitable stock lengths.
2. The conversion of each bar into a rough T-section by using a step mill to fly-cut two heavy sections of material from the stock.
3. The annealing of stock segments so that they could be roll-formed for a 42,000" radius.
4. The rough machining of radii, flange, web, and fillet dimensions on the parts.
5. The finish machining of parts to tolerances of plus 0.015" and minus 0.000".
6. The drilling, boring, reaming,

and deburring of parts for assembly purposes.

7. The cleaning and electroplating of finished parts.

This specified process had one very obvious disadvantage. In following this procedure, almost 75% of the original stock materials, worth about 20¢ a pound, were converted into scraps worth about 6¢ a pound.

In terms of dollars and cents, the cost of wasted stock materials (which were to be purchased by Convair, and might have been regarded as none of our concern) was not nearly as great as the cost of seemingly unnecessary fly cutting and annealing operations. Still, it was logical to assume that Convair would not have specified the process if a more economical method had been practical and would have produced the desired results. After all, Convair has many outstanding production men. And it doesn't take much of an authority on metalwork to tell you that it's cheaper to make a part of the type in question from a prefabricated T-section than from a solid bar of steel. There must have been a reason.

On the other hand, it doesn't pay to overlook any possibilities if you're trying to build up the sort of reputation that will assure the future orders of an important customer. So this purchasing agent assumed it as part of his responsibility to begin looking for prefabricated T's that could be used in place of solid bar stock in machining Convair's flap tracks, with a view to eliminate both the waste of metal

and the early steps in the fabricating process.

We soon learned why Convair buyers had not planned to order T-stock. It was very simple. None of the steel manufacturers appeared to have anything that would meet the specifications. The requirement was a "special" all the way.

However, we were lucky—lucky enough to discuss the problem with Jesse Shackleton, a well informed salesman for Columbia Steel Company, at the last moment. Shackleton didn't have the answer himself, but he informed us that his company's parent organization, U. S. Steel, had been hot-rolling 24' lengths of  $3 \times 3\frac{1}{8}$ " T-sections of 4140 steel during recent months. Such sections had not previously been used for applications of the type we had in mind, he added, but neither of us could see any reason why they wouldn't do the trick.

We obtained a strip of the material Shackleton had mentioned, converted it into a flap track for about half the cost of a part machined from solid steel, and sent the specimen track to San Diego for physical tests.

Convair engineers were surprised to find that our sample, besides costing substantially less than the parts they had ordered, exceeded the physical properties of tracks machined from forged bar stock. There was a simple reason for this too. It was to be expected in view of the fact that roll-formed steels normally have better grain structure than conventional forgings.

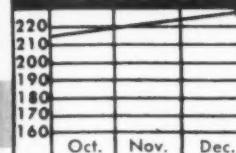
Needless to say, our suggestions for changes in flap-track production plans were quickly approved, and a change order was issued to take advantage of the new procedure.

It should be further noted that everybody benefitted from this change. In addition to having saved considerable money for a good customer without reducing our own profits on the order, we were in a position to handle additional orders because some of our facilities originally earmarked for that job were released for other work, since there was no longer a need for some of these facilities and operations in the fabrication of the flap-tracks.

Trend of Business  
As Seen In Current  
News & Statistics

# Where We Stand

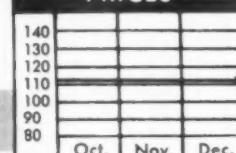
## PRODUCTION



	BASE	LATEST	MONTH AGO	YEAR AGO	% OF CHANGE IN MONTH	% OF CHANGE IN YEAR
--	------	--------	-----------	----------	----------------------	---------------------

Industrial Production Index .....	1935-1939=100	229	226	219	+ 1.3	+ 4.6
Steel Production (Weekly) .....	000 net tons	2,196	2,203	2,081	- 0.3	+ 5.5
Electric Power Production (Weekly) .....	mil KWH	8,165	7,807	7,444	+ 4.6	+ 9.7
Bituminous Coal Production (Weekly) .....	000 net tons	10,050	9,910	11,280	+ 1.5	-10.9
Auto, Truck & Bus Output (Weekly) .....	units	129,769	138,404	112,465	- 6.2	+15.4
Petroleum Output (Daily Average) .....	000 bbls.	6,394	6,612	6,134	- 3.3	+ 4.2

## PRICES



	BASE	LATEST	MONTH AGO	YEAR AGO	% OF CHANGE IN MONTH	% OF CHANGE IN YEAR
--	------	--------	-----------	----------	----------------------	---------------------

All Commodities (BLS) .....	1947-49=100	110.7	111.2	113.6	- 0.4	- 2.6
Farm Products .....	1947-49=100	103.8	104.9	112.0	- 1.0	- 7.3
Metals & Metal Products .....	1947-49=100	123.9	124.3	122.5	- 0.2	+ 1.1
Structural Products .....	1947-49=100	114.5	114.4	113.6	+ 0.1	+ 0.8
Steel Billets (Pittsburgh) .....	net ton	\$59.00	\$59.00	\$56.00	0	+ 5.3
Steel Scrap, heavy melting, Pitts.....	ton	43.00	43.00	43.00	0	0
Copper, electrolytic .....	lb.	.24½	.24½	.24½	0	0
Rubber (rib-smoked sheets) .....	lb.	.30¾	.29¼	.52	+ 5.1	-40.9
Wheat, No. 2 .....	bu.	2.755/8	2.78	2.873/8	- 0.7	- 4.0

## TRADE



	BASE	LATEST	MONTH AGO	YEAR AGO	% OF CHANGE IN MONTH	% OF CHANGE IN YEAR
--	------	--------	-----------	----------	----------------------	---------------------

Dept. Stores Sales Index (Fed. Res.) .....	1935-39=100	194	117	191	+65.8	+ 1.6
Commercial Failures (Dun & Bradstreet) .....	no.	120	143	136	-16.1	-11.8
Freight Carloadings .....	cars	719,159	829,198	773,530	-13.3	- 7.0

## FINANCE

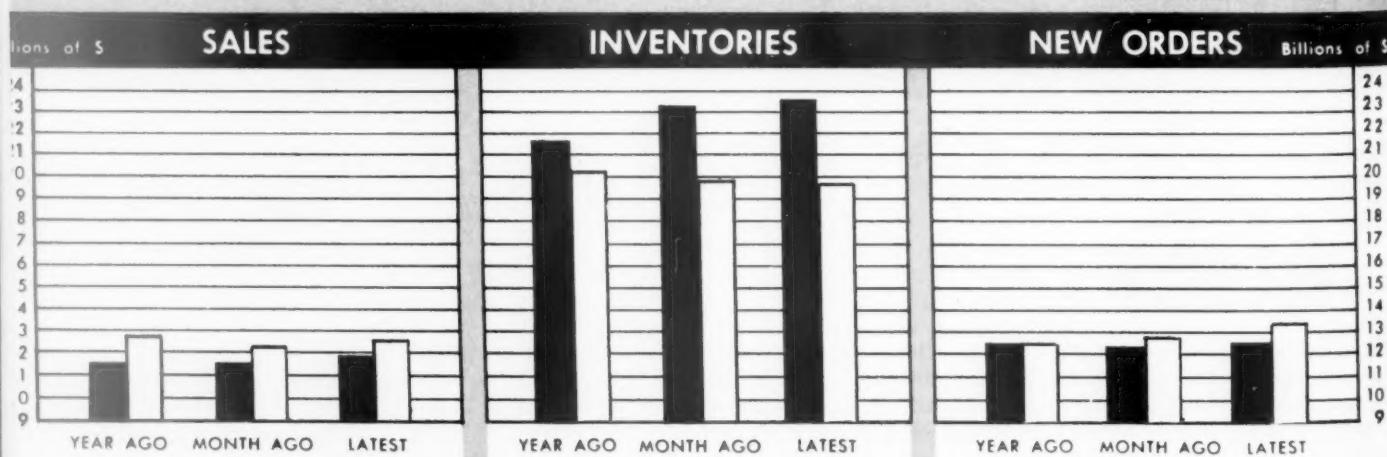
Stock Prices (Standard & Poor's) .....	1926=100	206.1	196.2	185.0	+ 5.0	+11.4
Bank Clearings (New York) .....	mil \$	8,320	7,731	9,554	+ 7.6	-12.9
Federal Reserve Credit .....	mil \$	26,860	25,696	24,980	+ 4.5	+ 7.5
Currency in Circulation .....	mil \$	30,370	29,905	29,037	+ 1.6	+ 4.6

## MANUFACTURERS' SALES, INVENTORIES AND NEW ORDERS

Value of Manufacturers' Sales Seasonally Adjusted (Millions of Dollars)	1951		1952			
	Oct.	Dec.	July	August	September	October
All Manufacturing industries . . . . .	22,726	20,761	21,249	22,078	23,663	24,632
Durable goods industries . . . . .	10,770	9,786	9,666	10,622	11,510	11,974
Primary metals . . . . .	2,053	1,853	1,974	1,959	2,107	2,183
Fabricated metals . . . . .	1,231	1,076	1,026	1,108	1,156	1,317
Electrical machinery . . . . .	1,038	1,034	870	1,179	1,256	1,200
Machinery (except electrical) . . . . .	1,947	1,926	1,708	1,895	1,966	2,032
Motor vehicles & equipment . . . . .	1,532	1,357	1,467	1,314	1,831	1,842
Transportation equipment (exc. motor vehicles) . . . . .	573	610	495	818	749	791
Furniture and fixtures . . . . .	334	242	244	379	419	410
Lumber products (exc. furniture) . . . . .	658	587	623	612	629	679
Stone, clay and glass products . . . . .	536	418	508	522	545	533
Professional, scientific instruments . . . . .	239	222	232	283	245	279
Other industries, incl. ordnance . . . . .	629	462	519	551	607	689
Nondurable goods industries . . . . .	11,956	10,975	11,583	11,456	12,154	12,659
Food and kindred products . . . . .	3,252	2,979	3,032	2,995	3,246	3,346
Beverages . . . . .	499	582	591	576	534	489
Tobacco products . . . . .	334	288	278	310	324	325
Textile-mill products . . . . .	1,151	1,110	1,182	1,065	1,137	1,180
Apparel . . . . .	948	727	940	971	1,068	1,274
Leather and products . . . . .	251	208	298	271	275	269
Paper and allied products . . . . .	717	601	637	658	699	729
Printing and publishing . . . . .	738	782	740	667	678	710
Chemicals and allied products . . . . .	1,520	1,408	1,535	1,497	1,602	1,669
Petroleum and coal products . . . . .	2,101	1,927	1,912	2,039	2,109	2,185
Rubber products . . . . .	447	363	438	408	482	n.a.
<b>Book Value of Manufacturers' Inventories Seasonally Adjusted (Millions of Dollars)</b>						
All Manufacturing industries . . . . .	42,437	42,014	42,213	43,146	43,224	43,310
Durable goods industries . . . . .	21,968	22,675	23,246	23,229	23,292	23,597
Primary metals . . . . .	2,709	2,778	2,879	2,957	3,031	3,062
Fabricated metals . . . . .	2,379	2,438	2,370	2,301	2,318	2,396
Electrical Machinery . . . . .	2,761	2,870	3,013	3,030	3,031	3,049
Machinery (exc. electrical) . . . . .	5,002	5,112	5,250	5,301	5,274	5,294
Motor vehicles & equipment . . . . .	2,615	2,700	2,588	2,630	2,636	2,722
Transportation equipment (exc. motor vehicles) . . . . .	1,780	2,176	2,448	2,315	2,343	2,430
Furniture and fixtures . . . . .	584	520	531	532	534	533
Lumber products (exc. furniture) . . . . .	1,022	1,092	1,059	1,025	1,006	1,019
Stone, clay and glass products . . . . .	834	841	960	901	892	875
Professional, scientific instruments . . . . .	735	718	720	778	764	778
Other industries, incl. ordnance . . . . .	1,546	1,428	1,430	1,460	1,462	1,439
Nondurable goods industries . . . . .	20,469	19,339	18,967	19,917	19,932	19,713
Food and kindred products . . . . .	3,668	3,386	3,385	3,463	3,443	3,452
Beverages . . . . .	1,232	1,193	1,230	1,260	1,268	1,245
Tobacco products . . . . .	1,691	1,836	1,782	1,720	1,726	1,727
Textile-mill products . . . . .	3,336	2,814	2,542	2,783	2,833	2,818
Apparel . . . . .	1,808	1,446	1,315	1,795	1,725	1,571
Leather and products . . . . .	677	567	518	557	541	545
Paper and allied products . . . . .	930	1,005	1,058	968	973	956
Printing and publishing . . . . .	759	757	717	725	734	738
Chemicals and allied products . . . . .	2,993	3,000	3,062	3,022	3,022	3,066
Petroleum and coal products . . . . .	2,630	2,535	2,561	2,739	2,788	2,777
Rubber products . . . . .	744	799	795	884	877	n.a.
<b>Manufacturers' New Orders (Unadjusted)</b>						
All Manufacturing industries . . . . .	25,000e	20,344	24,772	22,500	25,200e	25,900e
Durable goods industries . . . . .	12,500	9,889	13,033	10,400	12,300	12,500
Nondurable goods industries . . . . .	12,500	10,455	11,738	12,100	12,800	13,400

e — estimated    p — preliminary    n.a. — not available    r — revised

## SALES, INVENTORIES AND NEW ORDERS



**DURABLE GOODS**

**NON-DURABLE GOODS**

## STRAWS IN THE TRADE WIND

● There's another record in sight for industrial expansion. A regular survey made jointly by the Securities and Exchange Commission and the Department of Commerce indicates that expenditures on new plant and equipment in both the last quarter of 1952 and the first quarter of 1953 will top all previous outlays. According to the agencies' estimate, business expects to spend at annual seasonally-adjusted rates of \$28,300,000,000 in the final 1952 quarter, and \$28,700,000,000 in the first 1953 quarter. If the last quarter estimate proves correct, capital expenditures for the year 1952 will be \$26,900,000,000, or about 2% above those for 1951. It was revealed that the steel strike in the third quarter of 1952 cut back expenditures in that period by about 10%. Every industry, it was reported, with the exception of transportation, expects to make record expenditures in the first quarter of 1953.

● Many of the leading economists of the nation see only minor changes in the present high-level business picture during the coming year, according to the annual

survey of the F. W. Dodge Corporation. The company asked 137 top economists in business firms, universities, government agencies, and private consulting firms for their views on what business can expect in 1953. A majority said they thought activity would be generally stable, with the possibility of a very mild set-back in the second half. The gross national product — or total output of goods and services — is expected by most to increase moderately during the first half, and to recede somewhat in the second half.

● An outlook that's just as optimistic, but much longer in range, was expressed by another group, in a special report. The National Planning Association — a non-profit, non-political organization devoted to economic planning in agriculture, business, labor and the professions, says there is a distinct possibility that the economic situation will continue to get better, and that by 1960 we will have achieved great rises in productivity and standards of living. The association made no definite forecasts, however, saying, "we believe the course of economic events depends to a considerable extent on the way business, labor, consumers, etc., respond to a down-turn, and we do not know any method by which we can forecast whether or not these groups will take action in time to avoid a threatening depression."



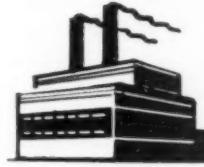
ability of a very mild set-back in the second half. The gross national product — or total output of goods and services — is expected by most to increase moderately during the first half, and to recede somewhat in the second half.

● American farmers did an "astonishing" job of production in 1952, despite the handicaps of drought, reduced acreages and generally lower prices for their products. That's the judgment contained in the Department of Agriculture's latest crop report. Farmers harvested the second largest amount of food, fiber, tobacco, etc., in history, falling short only of the 1948 level. But they went over the top on output of livestock and live-stock products, to put over-all production at a new high.

● The much-discussed possible merger between the two large labor unions — C.I.O. and A.F.L. — might not be as easy as it appears to some. One large and important sector of the A.F.L., the United Textile Workers Union, has blasted its C.I.O. counterpart, the Textile Workers' Union, as a "crumbling organization". The U.T.W. said, through its official publication, that the T.W.U. president, Emil Rieve, would attempt to "dictate" terms for labor unity. "We're not ready" it declared, "to listen to (his) dictates, or the whims of his . . . organization."

● The tremendous industrial potential in Saskatchewan continues to get top recognition. Sohio Petroleum Company and Socony-Vacuum Exploration Company have completed an agreement, involving approximately 5,400,000 acres of crown permit land, for a "high-level program of exploration" over the next three years. Under the pact, Socony becomes the operator on Sohio-held crown acreage, and will earn an undivided 50% interest in the permits by carrying out the exploration program. Expenditures are expected to top \$10,000,000 in the period. They would increase considerably in the event of an oil discovery.

● The National Economy Board of the Government of Cuba has recommended construction of a mill in that country to make newsprint from bagasse, the pulp left over after sugar cane has been processed. The board quoted the U.S. Bureau of Standards as saying newsprint from bagasse can be made of a quality equal to or better than that made



from wood pulp.

● U.S. imports and exports both rose in October. Commercial exports were \$1,036,400,000 in October as against \$971,500,000 in September. Imports rose from \$877,500,000 in September to \$917,000,000 in October.

## MATERIALS AND MARKETS



**STEEL:** Production for the year 1952 seemed headed toward topping 93,000,000 tons, despite the heavy losses — estimated up to 20,000,000 tons — sustained during the long strike of last summer. Demand is still quite heavy for all types of steel and there was little indication that there would be

much easing during the first quarter of 1953. In the longer view, however, leading industry spokesmen see a reduction of demand later on and a possible drop of 10 to 20 points in the ingot production rate (now over 100%). About the most representative attitude would be that expressed in the year end statement by Benjamin F. Fairless, chairman of the board of the United States Steel Corporation.

Mr. Fairless said that consumers' stocks of steel appear generally to be below normal and unbalanced, but should return to normal levels some time in the second quarter of 1953. In the second half of the year, he said, steel industry capacity — which will be in excess of 116,000,000 ingot tons — should be fully adequate to meet the needs of defense and civilian users. "This balancing of supply and demand does not indicate that we are entering a period of recession" Mr. Fairless declared. "Instead, I believe we shall then be engaged in a normal and healthy state of competitive selling."

In the prepared statement, Mr. Fairless said that the steel industry has expressed its conviction that rigid controls are no longer needed and has formally suggested a plan for decontrol to N.P.A. He said the industry hopes that elimination of current controls will proceed promptly. An N.P.A. official had been quoted earlier as saying that neither his agency nor the D.P.A. could do anything about steel decontrol until the problem was resolved by the incoming president. N.P.A., therefore, was going ahead with plans for second quarter allocations and an increased use of self-certifications, he said.

Increased allotments for the second quarter for manufacturers of durable goods — automobiles, appliances, etc. — were announced at mid-month. D.P.A. set them at 70% of pre-Korean deliveries, as compared with 60% in the last quarter of 1952. Automobile producers—who, incidentally are making big plans for the coming year, and putting on the pressure to get the steel to carry those plans out — will be allotted enough steel to build 1,250,000 passenger

automobiles and 315,000 trucks. Most programs — of steel users generally — will be able to step up activity in the second quarter, according to Ralph S. Trigg, acting Defense Production Administrator, except those requiring standard railroad rail, plate or heavy structural steel.

**NON-FERROUS METALS:** Power shortages continued to cut production of primary aluminum, but despite the handicap October production held up well according to the Aluminum Association. Production during October was 154,624,138 pounds because of the longer month, or about a million pounds over September's production ... On the basis of definite figures for the first 11 months of 1952, total production of primary aluminum in the United States during the year is estimated at 1,860,000,000 pounds. This exceeds the 1,840,358,500 pounds produced in 1943, peak year of World War II. These figures were carried in the year-end statement of Donald M. White, secretary of the association. Also in a year-end statement, J. W. Wilson, president of the Aluminum Company of America, declared that the industry is still pressed to meet all demand for its products, despite record-breaking production. He said the situation is expected to continue through the first quarter of 1953. "But increasing production capacity" he declared, "should tend to ease the pressure in the ensuing months."

Aluminum producers were offered a ceiling price increase by the government in exchange for a firmer delivery contract. Defense Mobilizer Fowler suggested a "conditional contract" for supply to the government which would be considered binding for five years after half the tonnage called for in individual company agreements has been delivered. The contracts in their present form can be cancelled.

Copper is still in strong demand, but there are some small signs that the supply situation is going to get better. Increased imports and rising domestic production are the reasons back of the statement by R. A. McDonald, N.P.A. deputy administrator that there is "room for more optimism in respect to copper than there was even a month ago." The International Materials Conference, although cutting allocations somewhat for the first quarter of 1953, indicated that the allocations might be dropped altogether before the end of the quarter. One I.M.C. official reported a noticeable easing of the copper market in recent months.



Demand for lead has been relatively quiet, as is generally expected at this time of year. A leading battery manufacturing executive declared that sales of automotive batteries — which use the greatest amounts of lead — are expected to register a slight rise in 1953. Lead, he said, seems to be in good supply, and from his company's point of view there is little need for the continuance of government controls on materials or prices in the storage battery industry.

Zinc users have been cautious in their forward buying, based on the expectation that the British Ministry of Materials would dump about 150,000 tons of the metal on the market when free trading is resumed on January 2. At this writing, it was reported that the agency would not take this step, but would sell back to producers 24,000 long tons of their own brand of zinc which will be available for delivery over the first half of 1953 at the rate of 4,000 tons a month. It is said that no other zinc will be put on the market by the Ministry during this period unless supplies are unavailable elsewhere... Meanwhile, F. E. Wormser, vice-president of St. Joseph Lead Company,

called for a sliding scale equalization tax or tariff on lead and zinc to reduce sharp fluctuations in the market for the metals. The levy would be put on existing duties, with the rates increased by steps as metal prices decline. It would be removed when prices went over 16 cents a pound.

**RUBBER:** In its annual roundup the Rubber Manufacturers Association reports that the industry will score its second largest rubber consumption record in history. Only in 1950, because of the outbreak of war in Korea, was consumption higher than in 1952. It was 1,250,000 long tons in the past year, as compared with 1,258,557 long tons in 1950. An all-time new consumption record is forecast for 1953, based on the accelerating tempo of rubber goods production in the last quarter. The industry's statisticians predict that 1,300,000 long tons of new rubber will be used over the next 12 months.

Price increases of 20 to 25 per cent for crude rubber will result in decreased use of that material by rubber products manufacturers in this country, John L. Collyer, president of The B. F. Goodrich Company, warned recently. Mr. Collyer pointed out that since the middle of October the price of top grade crude rubber had increased more than 5 cents a pound, making crude rubber cost more than 30 cents a pound, compared with American-made GR-S

rubber priced at 23 cents a pound. "As has happened in the past" he said, "crude rubber producers may price themselves out of the United States market, and American-made rubber, which is equal to or better than crude for the majority of uses, will be consumed in increasing amounts." He said that the current rate of production of GR-S in this country is 580,000 tons a year and plant capacity for that type, is now approximately 932,000 tons. Total plant capacity for all types of American rubbers is in excess of 1,000,000 tons per year, assuring a sufficient supply to meet any increased demands by American manufacturers.

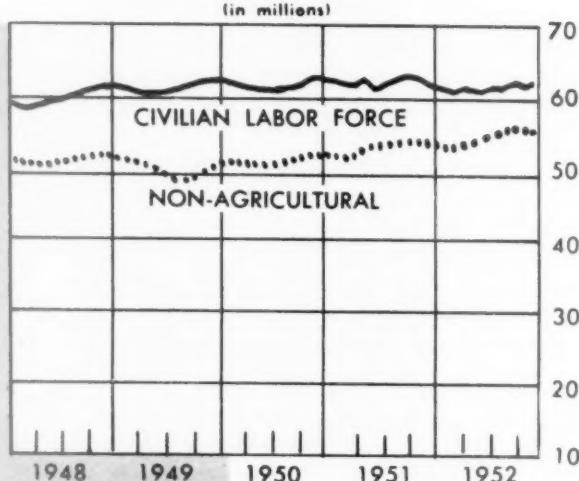
**LUMBER:** Demand for some lumber items strengthened during the third quarter of 1952, according to the latest report of the Lumber Survey Committee to the Secretary of Commerce. But over-all demand continued to be soft, the group said, with the result that lumber markets were spotty. Wholesale lumber prices on the average remained relatively steady, however. Third quarter lumber production showed an 8 per cent seasonal increase over the second quarter, and was the highest quarterly output recorded since the second quarter of 1951... Georgia-Pacific Plywood Company has raised its f.o.b. mill price on Douglas fir plywood to \$85 per 1000 sq. ft. from \$80, on the index item, and on all other items of Douglas fir plywood proportionately. It reported that demand is excellent and in excess of supply, and that inventories at all levels are low.

**FUELS:** Demand for light and heavy fuel oils has risen seasonally, but because of the good supply situation there has been a virtual disappearance of the fears that shortages would develop this winter. Latest figures on stocks of crude oil and products are impressive. According to the Bureau of Mines, refined stocks of petroleum products at the end of September amounted to 417,448,000 barrels, an increase of 40,485,000 barrels over the amount on hand at the beginning of 1952. Above ground supplies of crude oil in that period rose almost 9,000,000 barrels to 264,723,000 on September 1... Reflecting present high crude stocks, the Texas Railroad Commission permitted a large cutback in Texas crude oil output for January, the second successive monthly reduction. A representative of one large company requesting the reduction in daily allowable production said that weather has been warmer than usual, reducing the demand for heating oil and adding to distillate stocks. He said that by January 31 distillate stocks will be 10 per cent greater than at the same time a year ago, unless unusually cold weather strikes.



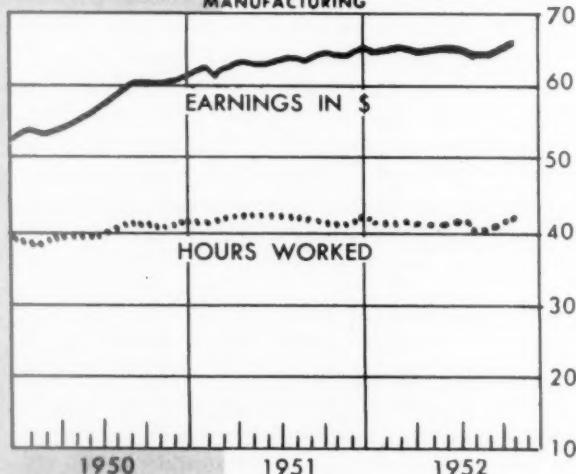
## THE PULSE OF BUSINESS

### EMPLOYMENT (in millions)



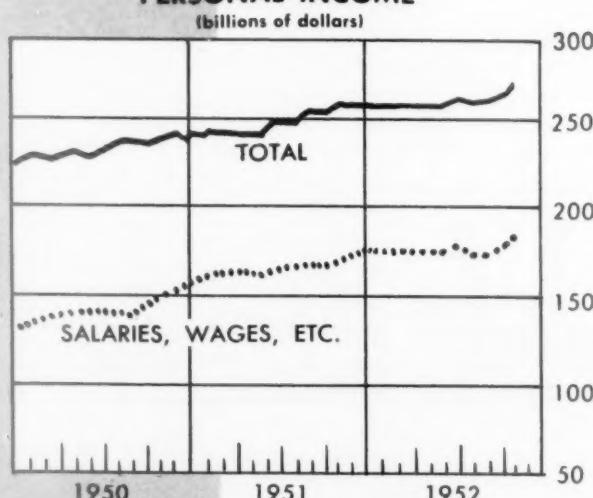
Source: Bureau of the Census

### AVERAGE WEEKLY EARNINGS AND HOURS MANUFACTURING



Source: U.S. Department of Labor

### PERSONAL INCOME (billions of dollars)



Source: U.S. Department of Commerce

This is the time for reviews, previews, forecasts and the like, and they are being made in good number with an unusual amount of more than cautious optimism. A random sampling shows that business men, legislators, government economists, and university economists are generally agreed that there will be no real slump in 1953. A little falling off, perhaps, in the last or third quarter, but nothing like the rather severe recession that some people had thought would follow the decline in defense spending scheduled for mid-1953.

"**Powerful sustaining forces**" in our economy, according to the latest survey of the Congressional Joint Economic Committee, do not guarantee continued or uninterrupted prosperity, but they do provide a basis for business optimism. Among these sustaining forces: the increasing population with its continually expanding demands for food, housing, clothing and other things; demands for plant and equipment investment, schools, highways, and public construction. How business figures its part in this high level of activity is seen in the estimates of new records in capital outlay during the first quarter. (See "Straws in the Trade Winds.")

In even more down-to-earth terms, heads of two of the largest producers of both industrial and consumer electric products were cheerful over prospects for '53. "Other companies may be concerned about a recession" said Ralph Cordiner, president of the General Electric Company, "but as far as we can see, we are going to have good business in spite of the economists." He predicted that prices during the year would be generally stable, with the average at about what it is now. He said prices would probably not go lower than they are, and if they went up it would only be temporarily, in response to forces of supply and demand.

Predicting in mid-December that sales of Westinghouse Electric Corporation for 1952 would reach a record \$1,400,000,000, Gwilym A. Price, president, added that the outlook for 1953 is good. The output of industrial and defense products "seems certain" to stay high, he said. "Barring an unexpected turn of events in the international situation, industry's 1953 course should be one of continued high production. And while the consumer will not spend recklessly, and even may show interest in savings, he may nonetheless buy such products as home appliances in record numbers."

Auto makers, too, are planning for a big year. From Chevrolet to Cadillac, all along the line, the idea seems to be to boost production and meet all competition head on. William E. Fish, general sales manager of the General Motors Corp. Division predicted that manufacturers will produce and sell a total of 6,300,000 vehicles in 1953—not a record by any means but a very substantial output in view of current conditions. Better material supply and easing of controls may permit them to do even better.

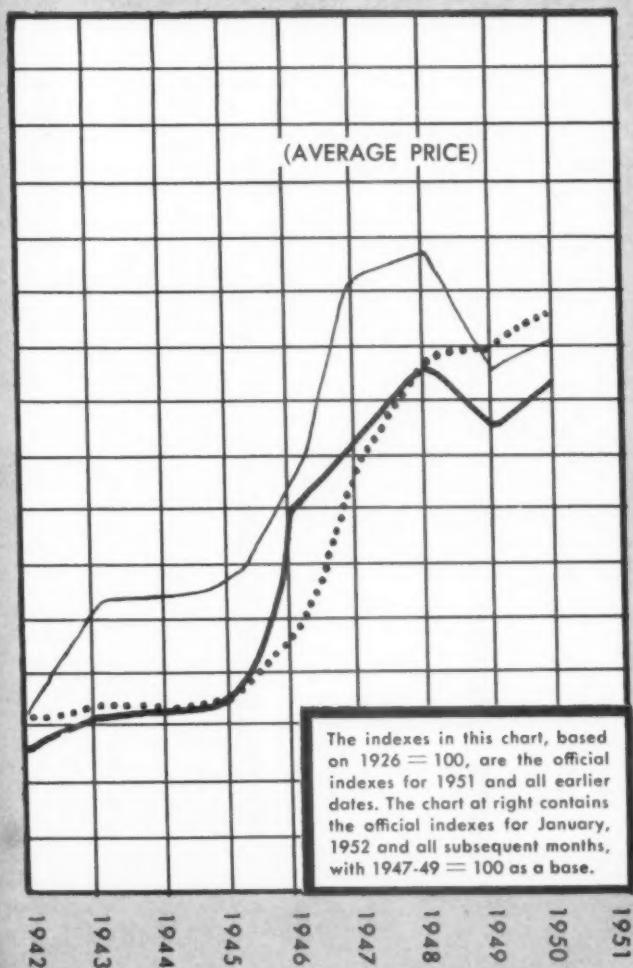
Not the least important factor in these plans of industry is the confidence engendered by the election of a new

the  
an  
an-  
ern-  
illy  
ittle  
ing  
had  
ing

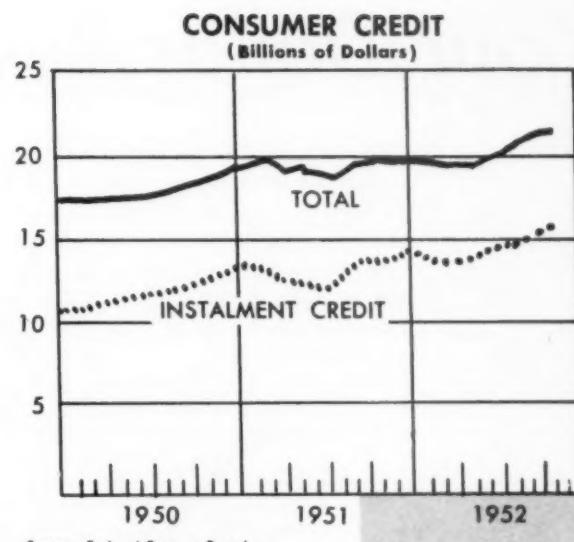
ing  
omic  
oted  
op-  
ing  
for  
for  
and  
this  
ords  
s in

administration. The feeling seems to be that with business due to get a "break"—that is to say not special, but simply fair treatment for a change—greater productivity and greater progress in individual enterprise will be possible. And business appears to be ready to live up to the responsibility that goes with that opportunity. Trade groups and individual leaders have been careful to point out that the inauguration of a new president will not be a signal for business to assert its independence by restoring all the economic abuses of other days—thereby making come true all the dire predictions of the losing party and giving it a club for further attacks. "We will be on probation" as Donald F. Carpenter, general manager of the film department, E. I. du Pont de Nemours & Company, recently put it. "It is now the time for us to show our statesmanship. We must not change from the hunted animal to the devouring beast—but rather we must emerge from behind the trees confident that we will not be fired upon by the first government agency that spots us. We must quietly, sincerely and energetically carry on our duties."

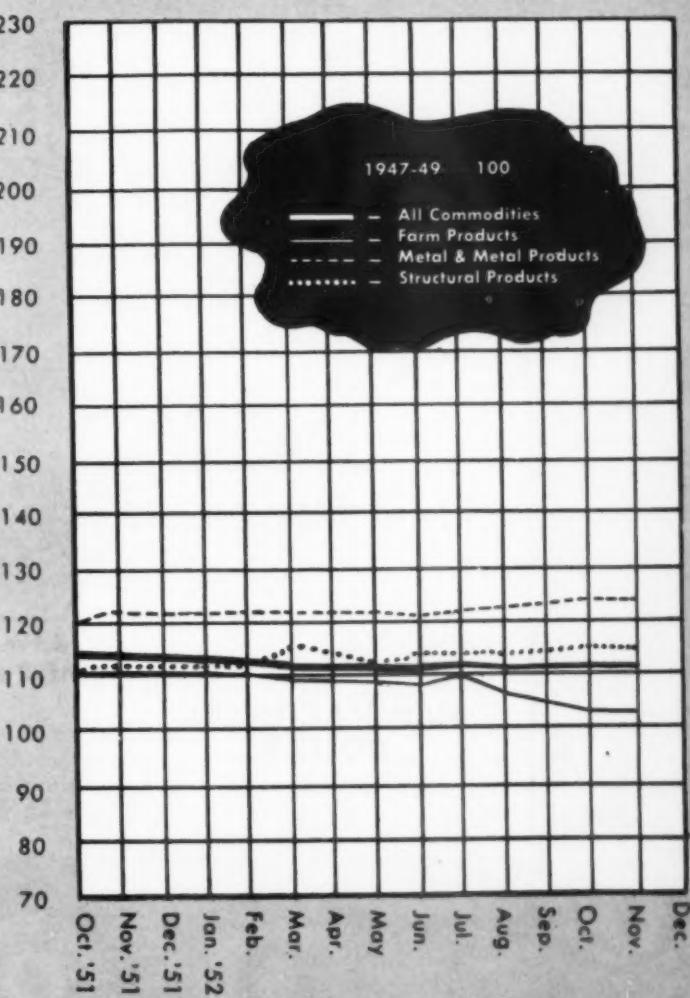
## THE PRICE PICTURE



The indexes in this chart, based on 1926 = 100, are the official indexes for 1951 and all earlier dates. The chart at right contains the official indexes for January, 1952 and all subsequent months, with 1947-49 = 100 as a base.

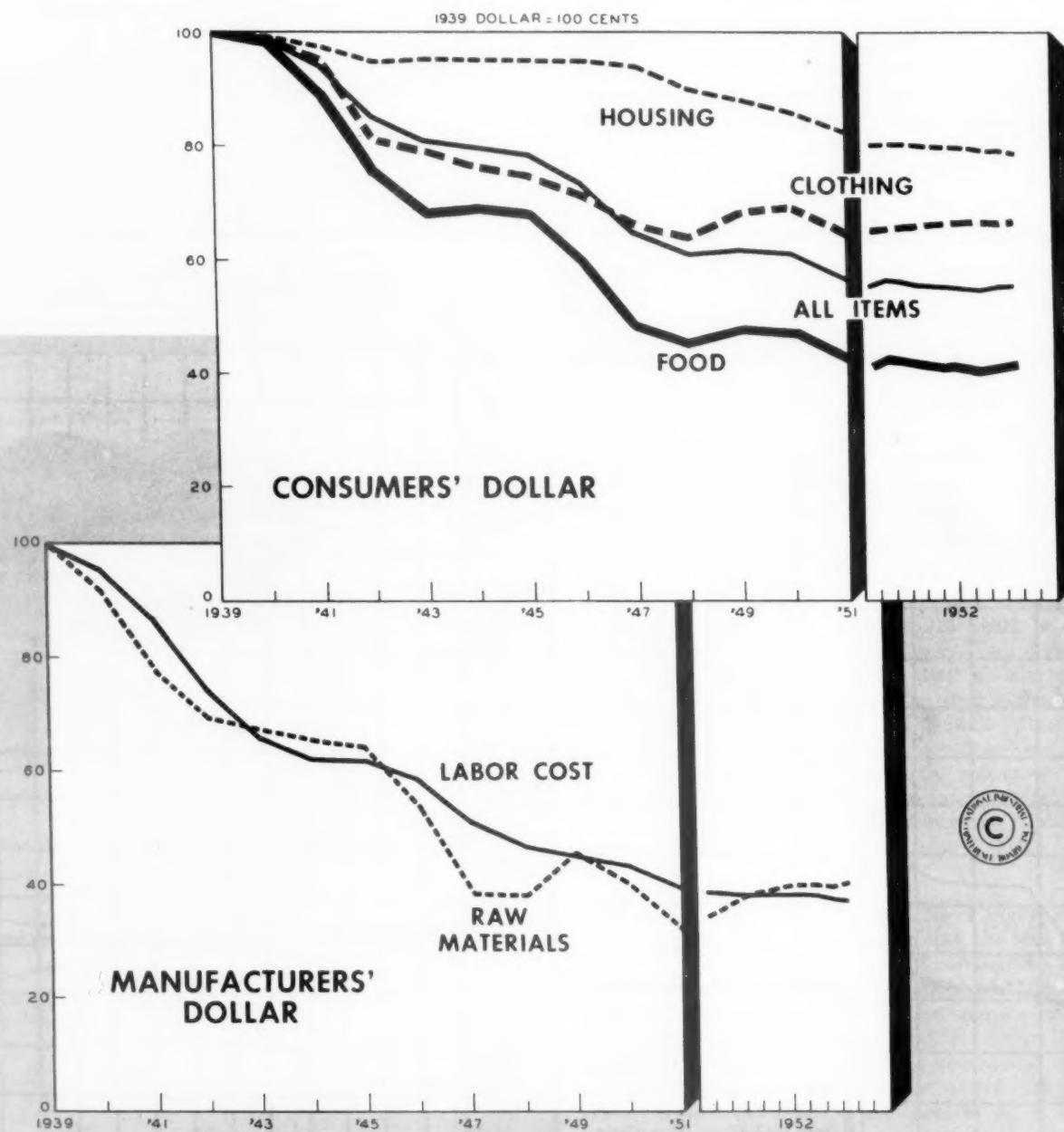


Source: Federal Reserve Board



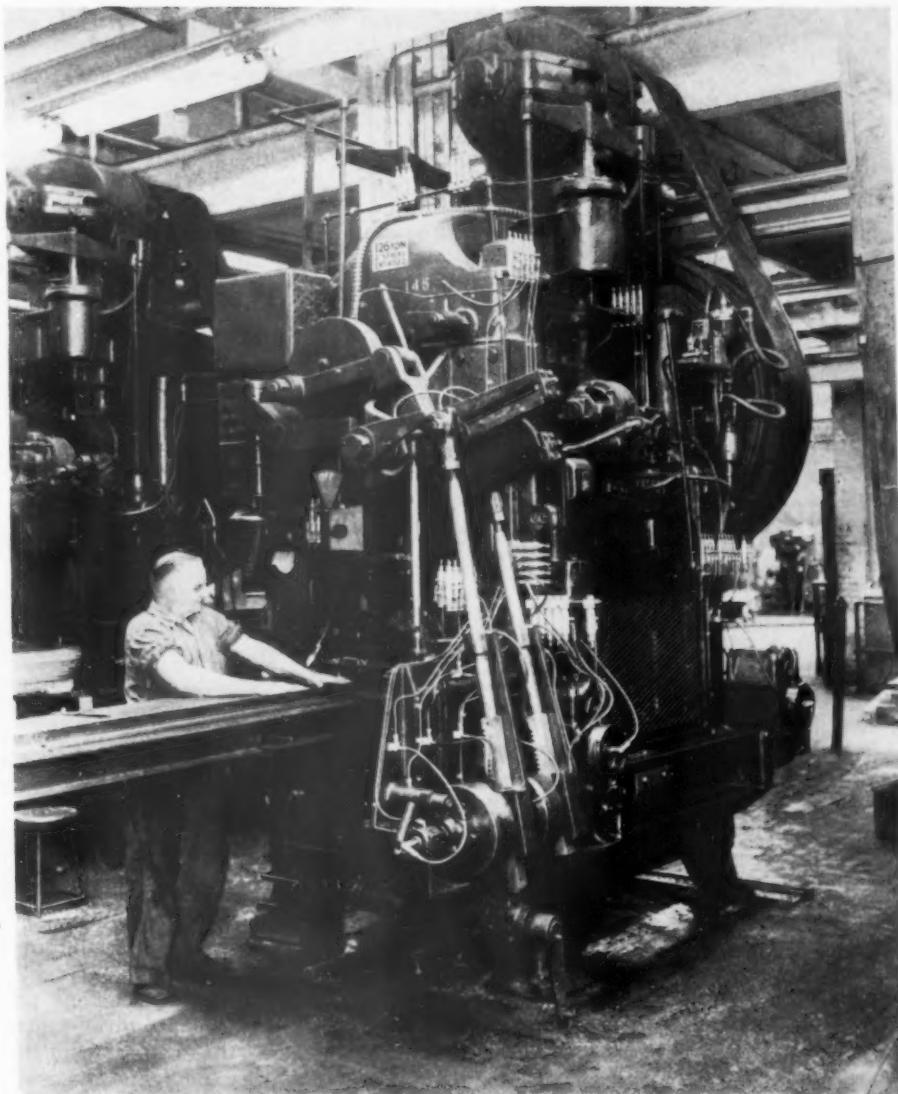
# Your Dollar Buys Less and Less—

Both the consumer and the manufacturer have seen the purchasing power of their dollars shrink steadily in the past few years. Just how far that shrinkage has gone is graphically portrayed in the latest Road Map of Industry (No. 885) issued by the National Industrial Conference Board and reproduced here. The big bite in the consumers' dollar is from food prices, while manufacturers have seen both labor and materials costs rise almost continuously. Despite the decline in the dollar's value, says N.I.C.B., the apparent loss has been offset by the increased earnings of the bulk of consumers and manufacturers.



*End-cost is the criterion in maintenance, too*

## Watch That Maintenance Budget!



Lubrication is one of the major maintenance and operating problems in most plants. Proper lubrication is the source of varied and substantial savings. When these punch presses were lubricated once each shift, by hand, the slide ways had to be reconditioned every six months. With automatic lubrication, the presses have functioned two years without reconditioning. Photo by courtesy of Lincoln Engineering Co.

• By George E. Henry

"**A** CHALLENGE and an opportunity". We've all heard that as the theme of various speakers. The fact is that all industrial operations are just that. However, there is one major industrial function in particular that is rapidly coming to the fore as presenting an unusual combination of chal-

lenge and opportunity for improved performance and reduced costs. It is maintenance — preventive maintenance—MRO in all its comprehensiveness.

In some plants maintenance has been organized and carried on along practical, scientific lines, looking to maximum performance at

minimum cost, with eye to the fact that maintenance costs are reflected in operational costs and the profit account. In all too many plants, however, maintenance has been one of those taken-for-granted operations, where plant men and top management raise the devil about drippings at the spigot and overlook

## MAINTENANCE SHOPPING LIST

A partial listing of representative maintenance and operating supplies purchased by manufacturing plants

Abrasives	Fans	Office Supplies	Soap
Acids	Fasteners, belt	Oil, anti-rust	Sockets, tool
	Fasteners, metal	Oil, cutting	Solder
	Files	Oil, lubricating	Soldering irons
Batteries	Fire protection equipment	Oil, machine	Solvents
Bearings	Fittings	Oil, masking	Spacers
Bearing metals	Flux	Oil, motor	Staples
Belting	Gaskets	Oil, neatsfoot	Stamps
Bolts and nuts	Gears	Oil, quenching	Steel
Brushes, carbon	Globes	Oil, transformer	Steel wool
Brushes, cleaning	Gloves	Oil, turbine	Strainers
Brushes, paint	Glue		Stretchers
Bulbs, electric	Grease	Packing	
Bushings	Guns, grease	Pails	Tackers
	Guns, spray	Paint	Tape, gummed
Cans, waste	Hacksaw blades	Pallets	Tape, masking
Cement	Hammers and mallets	Paper	Tarpaulins
Chemicals	Handles	Pipe and fittings	Textiles
Chisels	Hangers	Pliers	Tissue, toilet
Compound, boiler	Heater units	Plugs	Tools, cutting
Compounds, cleaning	Hoists	Primers	Tools, hand
Compound, valve grinding	Hose, air	Pulleys	Tools, portable electric
Cordage	Hose, high pressure	Punches	Towels, paper
Crayons, marking	Hose, hydraulic	Putty	Treads, non-slip
Cups and fittings, oil	Hose, oil resisting	Rasp	Trucks
	Hose, welding	Ratchets	Twine
Dispensers, soap	Jacks	Rawhide	
Dollies	Ladders	Rivets	Valves and fittings
	Lamps	Rock salt	Varnish
Electrical Supplies	Lanterns	Rope	Vises
Cable	Lath, rock	Rust preventives	
Cell testers	Levels	Safety equipment	Wax
Channels	Lifters, valve	Saws	Welding rod
Condulets	Locks	Scales	Welding tips
Connectors	Lubricants	Screening	Wipers
Fuses	Lumber	Screws	Wire
Insulators	Mats, rubber	Screwdrivers	Wire rope
Motors	Mops	Seals, oil	Wheels
Outlets	Movers, car	Shellac	Wheelbarrows
Receptacles	Nails, common	Sheets, drip	Wrenches
Rectifiers	Nails, cement coated	Shovels	
Starters		Slings	
Sockets		Snips	
Switches			Zeplite
Voltmeters			
Enamel			

the big waste at the bunghole.

What does plant maintenance cost? Industrywise, the figure has been placed at \$8,000,000,000 a year. On a plant basis the figures vary widely. In some plants the cost may run as high as 20% of the sales dollar—a large hunk. Thence the cost runs down to an average ranging from 3 to 5%, and some plants are fortunate in being able to report maintenance costs that are less than 1% of net sales.

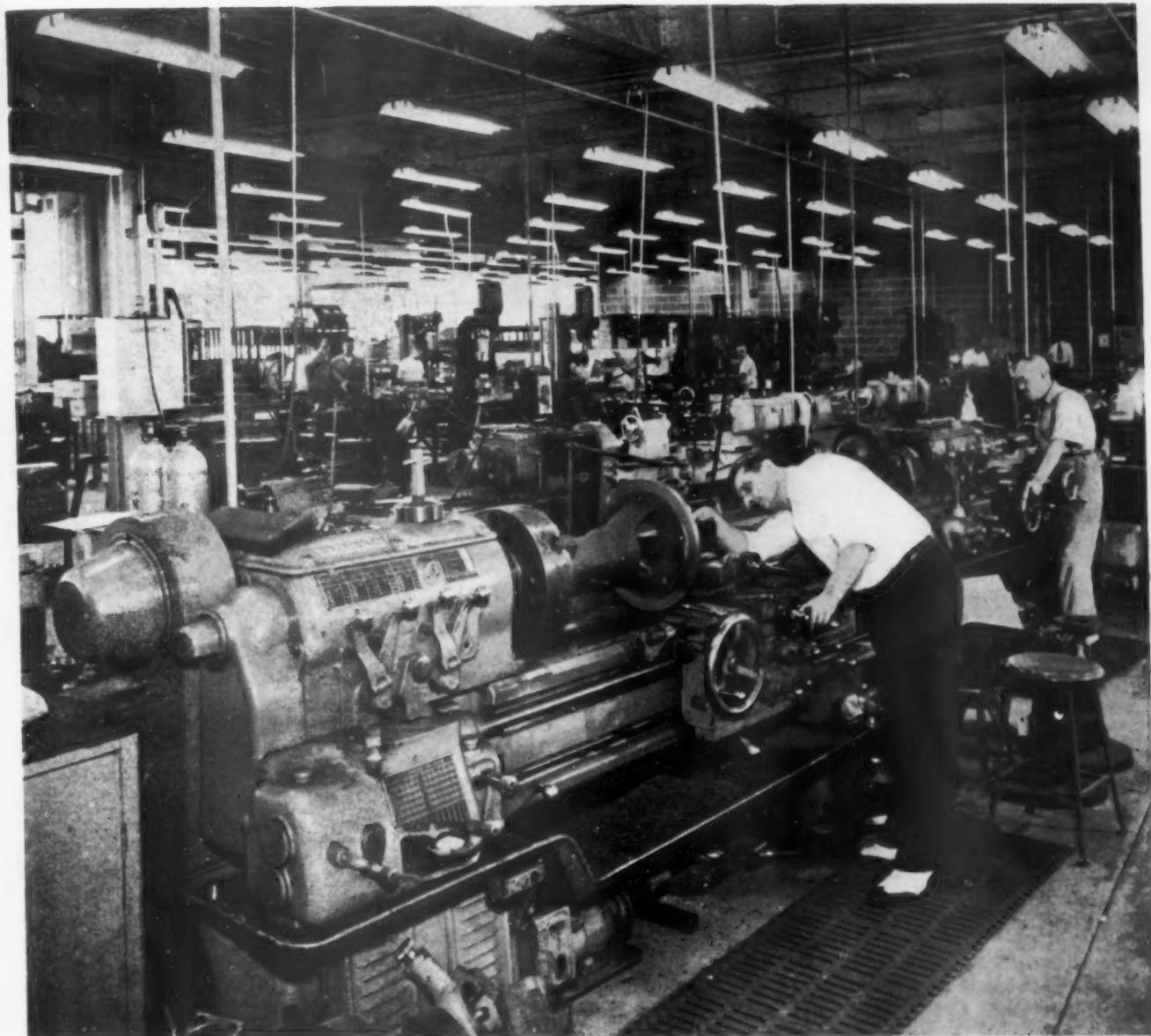
Maintenance costs money. Like the procurement procedure in some plants, it has not received the attention and critical analysis that should be given to it. For maintenance is far more than a matter of good housekeeping, general repairs, or a mop and broom job. In its broad aspect it deals with economical and continuous plant operation, lower production costs, minimum inventories of repair and equipment parts, supplies, and numerous other things.

As a matter of fact, the goal of progressive management is preventive maintenance, for experience has shown that it is far cheaper to keep equipment and lines in good operation than it is to wait for a breakdown before making replacements and repairs. As expressed by one plant man, it is a matter of fixing something today that does not need to be fixed so that you don't have to fix it tomorrow when it has to be fixed.

The basic importance of preventive maintenance is forcefully set forth in a statement by the plant engineer of one of the large motor companies, that assembly line stoppage at his plant costs at least \$3,000 a minute.

Of course the number of plants where an assembly line stoppage would be so expensive is not great, yet there are thousands of plants where small line shutdowns due to mechanical failures, and shortage of repair or replacement parts, could well run into three-figure losses—losses that cannot long be tolerated by any company whose very existence depends upon its ability to hold its own in competitive markets.

In this connection, it is of especial interest that a research report on the cost of industrial maintenance submitted at the First Annual Plant Maintenance Conference in 1950, revealed that for various industrial operations, maintenance costs in the year 1948 were slightly more than the dividends paid to stockholders, and that 15% of the 935 companies furnishing data for



Varied kinds of cleaning compounds and equipment are required to keep floors and machines in this spic-and-span condition in the Arco Manufacturing Division plant of Air Reduction, Inc.

the report expended more on maintenance costs than they earned in net profits after taxes.

Estimate has been made that in some industrial maintenance operations, material costs represent 50% to 60% of the maintenance costs, comparable to manufacturing operations, while in others the cost of manhours may run as high as 90% of the maintenance cost.

Be that as it may, the cold fact remains that while maintenance may be costly, shutdowns often involve heavy costs far removed from the production line itself—say the profits of continuous operation, delays in filling orders, ruffled customers, rush procurement, delayed deliveries, and a variety of other headaches.

These matters are all of primary concern to the purchasing department, for in the overall picture, plant maintenance and operation are utterly dependent upon the procurement of the necessary materials therefor.

It is the purchasing department that must know markets and suppliers, must place orders and get needed tools, replacement parts, repair materials and supplies. It is the purchasing department that must keep adequate supplies of operating, repair and maintenance materials coming in to assure continuity of operation.

In other words, the responsibilities of the purchasing department in the procurement of MRO materials are the same as in the procure-

ment of production materials, tools and equipment.

Another speaker at one of the plant maintenance conferences, representing one of the country's great industries said: "We are vitally concerned about costs and we can't reduce them by pulling a rabbit out of a hat. We have to compete. To meet competition we must control our costs. Maintenance of our plants is a part of the cost of our products and a big item. . . A good maintenance budget should be aimed at lowering the cost of a product. It should be aimed at the lowest manufacturing cost rather than the lowest maintenance cost."

Any one of our progressive purchasing men might have made that



It is estimated that the savings effected in production time and costs by this new fluorescent lighting installation in Gerrish Milliken Mill, Pendleton, S. C., will pay for the installation in three years. Photo courtesy of Sylvan Electric Products.

comment. It reflects the need for full and complete cooperation between the purchasing department and those responsible for plant maintenance.

The purchasing department is in strategic position to help plant men keep their costs down, because of its knowledge of sources, service, materials, markets, buying quantities that command favorable prices, and many other factors. The purchasing department and the stores department should be responsible for keeping maintenance engineers posted on the material and equipment situation, for many maintenance supplies have been as critical as manufacturing materials.

There are so many angles to general and preventive maintenance varying according to industrial operation and plant, that it would be difficult to enumerate them all. Maintenance involves building maintenance, plant sanitation, lighting, lubrication, instrumentation, fuel, machine parts and tools, materials handling, packaging, storage, floors, safety, and so on.

These are all major activities that call for the use of a wide variety of materials, most of which are available in competitive markets from different suppliers. Yes, purchasing men can and do help operating and maintenance men keep their costs down.

Standardization enters into the

maintenance program in a big way. Chairman E. H. Weaver of the NAPA Standardization Committee, referring to equipment, tools, and supplies used in maintenance and operation as being the basis for in-plant standards, declared that this is an area which offers the purchasing agent unusual opportunity for making direct savings. It is in the maintenance area that old-fashioned ideas and practices seem to flourish, involving excessive costs for both materials and manpower.

Standardization of spare parts inventories solves many problems of inventory quantities, investment, supplier service, and so on. Quick repairs and prompt resumption of operations after a breakdown are dependent upon having a suitable supply of materials and equipment on hand. However, supplies that are "suitable" in the minds of some plant men tie up a lot of money along with the hazards of waste and obsolescence. Standardization throughout a plant, so far as practicable, would be a potent factor in establishing appropriate parts and supplies inventories, and providing reserve protection for a maximum number of installed equipment units.

Many purchasing departments have found that a spare parts manual or catalog is a good investment. Prepared with the cooperation of maintenance heads and periodically

reviewed, it is a practical mean for maintaining parts stocks at proper levels, as well as scrapping obsolete parts and machines.

And then there is the matter of make-or-buy in the procurement of equipment units, furniture, etc., for use in maintenance work. Here great deal of money is wasted when shop men order things to be made in the plant, for which the proper tools, materials or skills are nominally available. In a certain plant bookcases were built at a cost of \$150 as compared with a \$60 market price; wooden dowels were made at a cost of \$64, that the purchasing agent could have acquired more quickly at a cost of \$4, and a desk was provided for a foreman at a cost of \$92.25 which would have cost less than \$30 to purchase. This evidences carelessness on the part of plant men, and indicates that work orders for equipment and material to be made in the plant should be referred to the purchasing department.

Purchasing men are greatly concerned with the procurement, use and application of maintenance materials. It cannot be too strongly emphasized that those charged with the responsibility of efficient economical maintenance would find that complete cooperation with the purchasing department, would help to materially reduce maintenance costs.

## Some Controversial Questions Concerning Cash Discounts

By A. C. Shepherd, City Purchasing Agent, Winston-Salem, N. C.

**I**N the ideal situation, where goods are received promptly, and the invoices and receiving reports come to the purchasing department with similar promptness, in advance of the date on which a cash discount is indicated, there is no problem in earning these discounts. Everything goes smoothly. The vendor is satisfied with prompt payment and the purchasing department is satisfied with quick handling of the transactions. However, things do not always follow this ideal pattern, and problems arise.

The following answers are based on a survey of discount policies and procedures in nine city purchasing departments. All of the questions are somewhat controversial in nature, and it is not expected that there will be complete agreement with the ideas and answers here given. However, if this discussion stimulates thinking on the problem and leads to better practice, it will be worth while.

*Should discount be taken from date of invoice or date of receipt of goods?* Suppose goods are delayed in transit, and the discount date has expired before they are received. I believe that the discount should be taken in these cases, provided that payment is made promptly after receipt of goods. However, it is wise to send with the payment a letter explaining the delay in delivery and the reason for taking the discount. Most vendors will not object to this practice, though there will always be a few who will.

*What should be done when other departments consistently fail to return receiving reports promptly upon receipt of goods?* In public buying, as a rule, the purchasing department has no policing power, so it is usually necessary to resort to higher authority to get corrective action in cases like these. A memo to the department head, calling attention to the negligence, with a copy going to the City Manager or



the chairman of the committee under which the negligent department operates, is effective. However, should the discounts be lost because of departmental negligence, then the department involved, and not the Purchasing Department, should be held responsible. If all invoices and receiving reports are checked in on a time stamp when received in the purchasing department, this will aid in determining who is responsible for loss of discounts. A record should be kept of discounts lost, showing the amount involved, department involved, and reason for the loss. This could be made in the form of a monthly report to the City Manager or other governing body.

*Should discounts be taken regardless of the deadline date?* The cash discount terms and deadline are a part of the contract, and must be observed to earn the discount. One of the nine cities surveyed reports that they do take discounts regard-

This article is abstracted from a paper presented by Mr. Shepherd at the recent annual convention of the National Institute of Governmental Purchasing. It is frankly based on a limited cross-section of purchasing practice, in a specialized field. However, the questions raised are common to the entire field of purchasing. The subject of cash discounts is too often regarded as a minor routine detail in buying, yet instances may be cited where this factor alone is equal to the total cost of operating a purchasing department.

less of deadline date and "get away with it" in the majority of cases. Another usually takes the discount if the date is exceeded by only one or two days.

In a slightly different category is the purchasing department that incorporates in its request for quotation a statement that invoices will be paid by the 10th prox, to conform with their accounts payable procedure. It is felt that with this notice they are "within bounds" in taking a discount after the deadline date shown on invoices, providing that payment is made on or before 10th prox.

Aside from the ethics of the situation, my own experience is that unearned discounts, taken after

deadline date, are usually billed back, involving additional correspondence and eventual payment. The city or other organization that habitually takes discounts regardless of the deadline date is also endangering its good vendor relations. Vendors understandably do not care to do business with that type of buyer. The pay-off comes in lack of service when shortages are experienced, or in failure to quote on requirements when invited.

*How can we help ourselves to earn more cash discounts?* Probably no governmental unit is in position to take all cash discounts, for various and sundry reasons; but we can try to improve our methods so

as to take the greatest number of discounts possible. Four suggestions that may help are:

1. Set up a special file in which discount orders and/or invoices are kept, and consult it each day to observe the deadline dates. Supplement this with a tickler file to remind ordering departments to return their receiving reports promptly, that discounts may be taken.

2. Enlist the assistance of the City Manager or governing body, by having them instruct departments to cooperate to the utmost.

3. Prepare monthly reports for department heads, showing discounts earned and discounts lost.

4. The previously mentioned sys-

(Please turn to page 312)

## Was That Letter Mailed?

By Leslie Childs

WHERE a contract is made through the medium of letters, the ability to produce such letters, or copies thereof, in case of dispute, may be decisive of the controversy. But if the party addressed denies receiving the letters, and fails to produce them, the only recourse of the other party will be to introduce the carbon copies.

However, by the weight of authority, to do this, proof of the actual mailing of the original letters is required; mere proof of their writing is not enough. The gap between writing and mailing must be filled. Otherwise the carbon copies may be excluded, and the claim of the party relying thereon may go out the window.

Clearly, here is a point that may well be kept in mind when key contractual letters are being mailed, to the end that some record of mailing be preserved as insurance against being "caught short" in the later event that carbon copies are required as evidence.

### Improper Evidence

In one case, a plaintiff sued a defendant on a lease contract. To make its case, the plaintiff sought to introduce a letter it had written to the defendant. The latter denied receiving the letter. Plaintiff then tendered its carbon copy. The copy was admitted, over defendant's objection, and judgment for plaintiff followed. In reversing this decision, on the grounds that the copy was improperly admitted as evidence, the higher court reasoned:

"Defendant denied having received this letter, and a copy of same was introduced. . . . The admission of this letter was in error, since the proof by plaintiff failed to show the mailing of the letter in question.

"Plaintiff's accountant testified that he had dictated the letter, that it was written out, signed by plaintiff's treasurer, and then placed by the witness in an envelope . . . and handed by him to the mailing clerk to be stamped and dropped in the mail chute, and that this was the regular procedure of the office with regard to the writing and mailing of letters.

"The mailing clerk, however, was not called as a witness to fill the gap in the proof as to mailing, or as to showing an invariable practice as to all letters handed to him, hence the letter was inadmissible. . . . Judgment reversed." (170 N.Y.S. 409)

In another case, a lawsuit involving an insurance contract was in progress. The plaintiff demanded that the defendant produce certain letters that had passed between them. The defendant denied receiving the letters. Plaintiff then showed its office custom in handling letters and offered its copies of the letters in evidence.

The trial court admitted the letters and rendered judgment for the plaintiff. On appeal, the higher court reversed the judgment for error, having this to say:

"The defendant did not produce the original letters at the trial, and

copies of same were offered by the (plaintiff) and admitted. . . . It is contended that there was no proof of mailing, or evidence that the letters had been received by the defendant, and we are inclined to agree. . . .

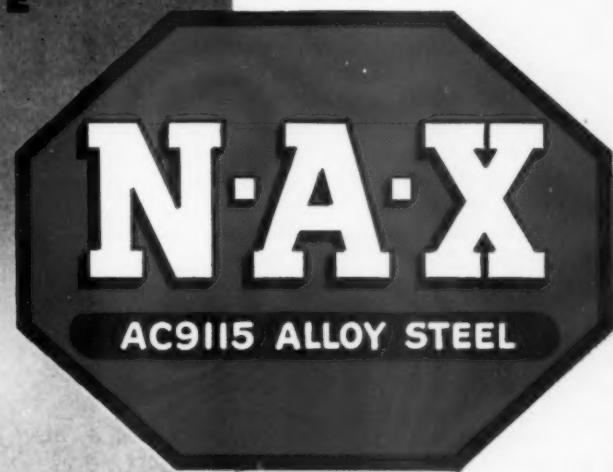
"No employee testified that he had performed the duty of collecting the mail on the dates when the letters were alleged to be sent. We do not think that the mere dictation or writing of a letter, coupled with evidence of an office custom with reference to the mailing of letters, is sufficient to constitute proof of mailing . . . in the absence of some proof or corroborating circumstance sufficient to establish the fact that the custom in the particular instance had in fact been followed. . . . Reversed." (162 A. 732)

While the courts are not precisely in accord on the point here involved, the holdings are supported by the weight of authority. Too, they constitute a striking illustration of the importance of being able to establish the mailing of unavailable key letters where a dispute turns upon their contents.

For, as we have seen, a failure here may preclude the introduction of copies of such letters. And it is easy to see how valuable legal rights may be lost in situations of this kind through a failure of proof. This is a nice point for business executives to have in mind, to the end that some record of the mailing of key letters be made, to insure the admissibility of copies thereof should occasion demand.

# a proven steel

FOR GAS TURBINE  
STRUCTURES



The production of gas turbines for jet aircraft engines and other uses is dependent upon metals which at both high and low temperatures have good strength, toughness, and stability before and after welding. N-A-X AC9115 ALLOY STEEL possesses these properties and is applicable to those parts where the operating temperatures range from -70° F. up to about +1000° F., and where suitable coatings are used for surface protection against normal and hot corrosion.

N-A-X AC9115 ALLOY STEEL has outstanding cold forming and welding characteristics and conserves critical alloys in its composition.

For more information about N-A-X AC9115 ALLOY STEEL, send for our new booklet.

A New Booklet  
For Design Engineers



Write for this 16-page booklet on N-A-X AC9115 ALLOY STEEL. It describes the properties and characteristics of this material and offers information on its fabricating and welding properties.

GREAT LAKES STEEL CORPORATION

N-A-X Alloy Division • Ecorse, Detroit 29, Michigan

NATIONAL STEEL CORPORATION



Makers of the famous



## Plugging the Leaks in Operating Expenses



● By David Markstein

UNNECESSARY costs quickly eat into net profits. One of the key men in planning effective cost control for any firm is the purchasing agent—in respect to operating costs as well as purchases. Here is a round-up of some of the ideas that have paid off in a number of companies by keeping costs in line, and sometimes reducing them.

### Mobile Manpower

Company A is a small outfit, where the work load fluctuates rather widely in regard to particular job assignments. This situation has been met, and manpower has been conserved, by what the owner terms a "liquid" personnel force. Each employee is trained to do at least one job besides the one for which he or she is primarily engaged. When there is a rush in one department, the managers can draw people from others where things may be slow at the moment, to meet the need.

### National Sources

Company B has grown from relatively small beginnings to the point where its material and supply requirements are quite substantial. The policy of buying from local sources wherever possible has been continued, but adherence to policy

is not permitted to stand in the way of economical purchasing. "I get lists on a national basis," says the P. A., "and regularly check them with quotations in the local market. Many times, I am able to pay freight and express charges and still realize substantial savings over ordering parts and materials locally. If I'm in doubt as to the quality of an offering from elsewhere, I place a small trial order to test the product and see whether it's up to the

standard of what we must have. In some cases, I have established regular sources at a distance from our plant, to mutual advantage. In other cases, it has served to keep our local sources in line with national markets."

### Controlling Personal Purchases

Company C formerly permitted employees to buy gasoline at the company filling tanks, for their own use, at a discount. The plant was

located pretty far out from the city, and many of the men came to work in their own cars, so it was regarded as good personnel policy to permit them to fill up at the fleet tanks, noting the amounts on tabs for periodical settlement. However, a serious leakage resulted, since some carelessly neglected to register the amounts used and a few not-so-honest employees falsified the tabs. "It wasn't practical to station a permanent employee at the pumps," says this report, "but the 'leakage' more than offset the discount saving in buying at fleet rates. We were obliged to discontinue the private pumps, but we were able to make an arrangement with a nearby service station to handle employee and company requirements with direct billing to the company. They allow us a company discount—not quite as large as we enjoyed before—but we aren't bothered any longer with employee miscalculations, and we

the suitability of listed quantities; in some cases, the weekly executive meeting affords a good opportunity for discussing several projected purchases with various executives familiar with different phases of company planning. Third, stock records are consulted to show movement of the stock in question for five years back. The study of these several records is correlated with an eye to appraising a pattern of future need from performance trends.

#### Pre-Planned Printing

Company E uses a lot of printing. A plan was worked out with the printing company that has reduced these graphic arts costs considerably. Before the specifications of a job are set, often before anything more than a very general idea has been blocked out, a meeting is held with the printing plant executives. "After we decide on size, art

Company F has found that careful control of its delivery and pick-up schedules is an important cost-cutting aid. No "immediate" trips are promised except in cases of real emergency. Systematic planning of the route and schedule of each vehicle allows gasoline costs to be reduced about 20%, and call-backs from the drivers at key points enable a clerk at the central office to take care of additional stops without the necessity of a special trip to a neighborhood where the truck is already available.

In addition, the company makes another saving, which is known to be substantial, though not so easily measurable. Local salesmen ride the trucks, taking advantage of the fact that a truck may be in one neighborhood for a number of hours, to put in effective canvassing and follow-up leads without duplicating transit costs.

For smaller work, where heavy loads are not involved, a Crosley car is used in place of a truck. The operating and upkeep cost on this small vehicle is but a fraction of that of a larger truck. "There is a 'plus' in this practice, too," says the stockroom manager. "I've had a number of people tell me that they noticed our company name and advertising message on the Crosley—far more than ever notice them on the trucks, where they are taken more or less for granted. The little car seems to have a big advertising impact."

#### Discount Ticklers

Company G has a double-barreled tickler system for taking advantage of all discounts—quantity and cash. Purchase record cards carry the information of where the price breaks occur on any given article, so it is possible always to get the best quantity discounts consistent with the keeping of a well-planned inventory. The invoice file is set up with day-of-the-month indexing, so that each invoice commitment is flagged for attention and payment in time to get "under the wire" to earn cash discounts.

#### Seasonal Employees

Company H is in a field where it becomes necessary to augment the stockroom force during the cool months and decrease it in the hot weather when business is slower. The P.A., who also handles stores, hit upon a spare time employee plan that furnishes him with intelligent people for the months when

(Please turn to page 322)



Schedules and routings for pick-up and delivery trucks according to need, make for efficient operation.

have eliminated one serious loss. Everybody is happy except the deliberate chiselers, and we don't have any particular regrets about them."

#### Triple Check

Company D keeps inventory quantity in line on planned purchases—neither too much nor too little—by making a periodical triple check on re-order quantities. First is the perpetual record, with standard maximum and minimum quantities noted, kept on cards racked up on a wheel-type file for fast reference. Second, department manager's personal judgment is requested as to

work, etc., it is usually too late for savings," explains the P.A. "But by discussing the details in advance, with the men who are going to do the job, it is frequently possible to make worthwhile savings. The printer's knowledge of paper sizes, how they will cut most economically, and how many copies 'up' can be run at a single impression, and—very important—the capacity of his presses and bindery equipment, has made it possible for us to reduce the cost of a job by as much as 40% below what the previous purchase of a comparable job had run. That figure is proved by our own actual records."

*Here's what you must prove to collect*

## Damages for Breach of Warranty

• By Leo T. Parker

**R**ECENTLY, a reader asked: "How much damages can a purchaser recover from a seller who breaches a warranty or guarantee? What can the seller's salesman say in favor of merchandise and yet not be liable on a guarantee? Can a purchaser recover from a seller who breaches a warranty, damages based on injury to the purchaser's established good will? If so, what testimony must the purchaser introduce to prove the amount of damages to which he is entitled?"

### Amount of Damages

Generally speaking, the higher courts hold that a purchaser may recover the "actual" damages resulting from a seller's breach of warranty. These "actual" damages may include loss of "good will", and the purchaser need not prove definite amount of such damages.

The latest higher court decision involving damages to a purchaser's "good will" is *Stott v. Johnston Company*, 229 Pac. (2d) 348. In order that readers may know the character of testimony necessary to prove that an employer is liable on a guarantee made by a salesman, I shall review this case in detail. The facts are as follows: A painting contractor named Stott had some ten years' experience, and had been engaged continuously in the business of painting houses since January, 1945. One Jack Hendricks, salesman for Johnston Company, called upon Stott in February for the purpose of interesting him in the use of certain paints.

At that time Stott, wanting some assurance with respect to the quality of Hendricks' paint testified that he asked Hendricks about the "company policy" in the event of "any paint going bad at any time", and

that Hendricks replied, "We would reimburse you 100% for labor and materials for any paint that goes bad . . . if anything went wrong with it, they would stand behind me 100%." Thereupon Stott purchased paint from Hendricks and during the following months painted some 50 residences and buildings. Stott prepared and applied the paint as he was instructed by Hendricks. Approximately 18 months later Stott reported to Hendricks that the paint

from customers whose buildings had been painted with the paint. He took Hendricks to one of the buildings and after examining the job, Hendricks stated that there was "definitely something wrong with the paint". An official of the Johnston Company also agreed that there was "something wrong with it", and proceeded to explain to Stott and the owners of the building that it was not Stott's fault that the paint was cracking and peeling off the walls,



"didn't seem to cover as well as it should". Hendricks checked one of the jobs that Stott had completed and said that the paint used "didn't contain enough pigment". Thereafter the company purportedly improved the quality of the paint by adding more pigment and Stott continued to buy it.

### Customers Complain

After a few more months passed Stott began to receive complaints

but that Stott had just received "a bum batch of paint".

As time went on Stott received more and more complaints. He testified that again he reported to Hendricks that many of his customers were complaining "on this paint peeling" on their jobs, and that Hendricks replied, "I know the paint is no good, but I would appreciate it . . . if you wouldn't go telling it around town that our paint is no good, because it would hurt my sales



## Whose cheese is being divided?

TWO cats could not agree on fair division of a tasty cheese. "Let's go to the monkey," said one, "He is all-wise and can divide our cheese fairly." So to the monkey they went.

The monkey immediately broke the cheese evenly and judicially put the two pieces on the pans of his balance. But one was slightly heavier. He shrewdly nibbled that piece a bit and put it back on the scales. Now it was the lighter piece. So he bit off some of the other piece only to find it the lighter. Thus while the two hungry cats watched, the monkey kept taking bites of the cheese, first one piece, then the other, until finally the cheese had almost disappeared.

"What's left is too small to divide," sagely pronounced the monkey, as he popped the remaining fragments into his mouth.

Observers of the American scene see a direct parallel between the record of federal taxation and this ancient parable of the trusting cats, the greedy monkey and the cheese. Business and the individual citizen have been content to trust government to rule on the disposition of their earnings. And Uncle Sam keeps taking bite after bite out of the shares of both individual citizen and business.

Already government bites are so large as to severely penalize citizens and business alike. If allowed to continue, it will seriously impede further industrial progress and growth, stifle initiative and threaten the strength of our free enterprise system. Beware the day—goal of the socialists among us—when the monkey says, "What's left is too small to divide."



**The Youngstown Sheet and Tube Company**  
General Offices--Youngstown 1, Ohio  
Export Offices--500 Fifth Avenue, New York  
**MANUFACTURERS OF CARBON ALLOY AND YOLOY STEELS**

RAILROAD TRACK SPIKES - CONDUIT - HOT AND COLD FINISHED CARBON AND ALLOY BARS - PIPE AND TUBULAR PRODUCTS - WIRE - ELECTROLYTIC TIN PLATE - COKE TIN PLATE - RODS - SHEETS - PLATES.

terrible." About two weeks later an official of the company inspected some other houses and then told Stott that the trouble lay in "surface condition", and that the houses Stott was painting were so old that they were not worth painting and "should be burned down".

Then Stott sued the Johnston Company for breach of warranty, seeking damages upon these three claims: (1) \$5,468.15, representing the amount Stott paid for the allegedly defective paint; (2) \$50,000 as the cost necessary to repaint the

or better' than the paint plaintiff (Stott) was using, and that if anything went wrong with it, they would stand behind (him) 100%."

With respect to the contentions of the Johnston Company that Stott did not prove actual damages to his good will, the higher court said:

"It appears to be the general rule that while plaintiff (Stott) must show with reasonable certainty that he suffered damages by reason of the wrongful act of Defendant (Johnston Company), once the cause and existence of damages have been

in the trade, to the lasting detriment of the reputation of plaintiff's product. It is not necessary that damages of this kind, in order to be recoverable, shall be capable of calculation with mathematical accuracy; these elements may be determined by approximation."

#### Matters of Opinion

Modern higher courts consistently hold that a seller never is liable on a warranty if the testimony shows that he simply "bragged" on the quality of his merchandise.

For illustration, in Carter v. Seaboard Company, 203 Pac. (2d) 758, it was shown at the time the sale was being made the seller said: "This machine should be in good condition because of the amount of money I spent in having it repaired."

Soon after taking delivery the purchaser returned the machine to the seller because it was in poor mechanical condition. In subsequent litigation, the purchaser asked the court to rescind the contract and compel the seller to return the full cash paid on the contract.

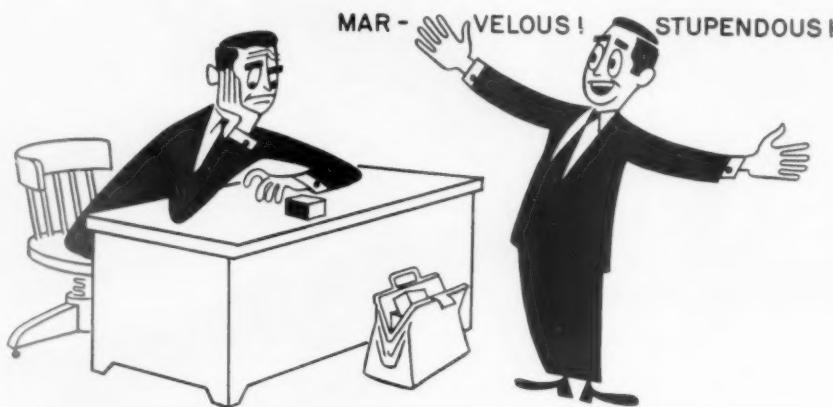
The purchaser contended that the seller had breached his guarantee. It is interesting to note that the higher court refused to hold in favor of the purchaser, holding that the seller had not guaranteed the machine. The court said:

"The only statement of Brace (salesman) was that 'it should be in good condition' in view of the fact that the employer had recently spent nearly \$3,000 in having it repaired. This was merely Brace's opinion, based upon expenditures for repairs, and did not form a basis for a cause of action . . ."

#### Sales Superlatives

For comparison see Shawen v. District Motor Company, 34 Atl. (2d) 29. Here a seller sued a purchaser for the contract price of certain equipment. The purchaser defended the suit on the grounds that the seller had breached a valid guarantee because he had stated that the equipment was the "most desirable" for the purpose. The purchaser proved that other equipment had better quality and, therefore, was more desirable. However, the higher court refused to hold the seller guilty of fraud or liable on a guarantee and said:

"There are some matters which, even though asserted positively, are in their nature so dependent on individual opinion that, no matter how positive the seller's assertion, it is not held to create a warranty. Such assertions as that things are 'fine' or



SALESMEN'S EXAGGERATED CLAIMS OF QUALITY ARE NOT CONSTRUED IN LAW AS WARRANTY OF THE PRODUCT

buildings he had painted with the defective paint; and (3) \$40,000, for the loss of customers and good will.

#### Damages for Good Will

The lower court considered all testimony and stated that in its opinion there was no basis for recovery on the first two items. Accordingly, only the third item of loss, the issue of damage to good will, was submitted to the jury. The lower court returned the verdict of \$10,000 damages against Johnston Company. The higher court approved the verdict, saying:

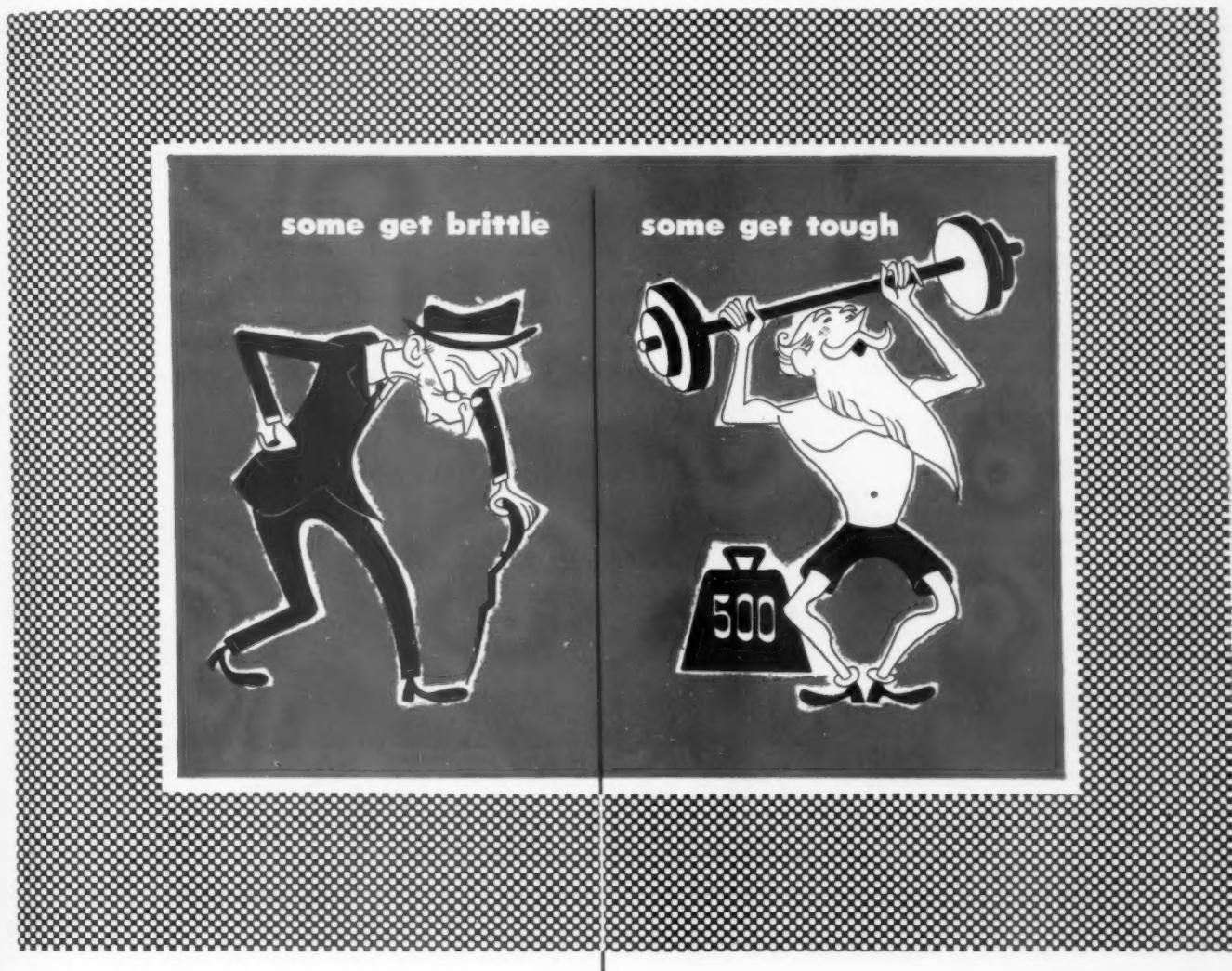
"As the record here stands, the conclusion seems inescapable that the statements of defendant (Johnston Company) and his salesman, Hendricks, constituted an express warranty; indeed it would be difficult to conceive of a clearer instance of a buyer being induced to buy upon the representations of a seller. The record shows that plaintiff (Stott) was using the 'Rich' paint in his painting business and was satisfied with it; that defendant's salesman, Hendricks, told Stott that Johnston's paint was 'the best money could buy', that it was 'as good . . .

so established, recovery will not be denied because the damages are difficult of ascertainment. Under all the circumstances showing the extent of plaintiff's (Stott's) injury by reason of defendant's breach of warranty, it is clear that the award of \$10,000 is a reasonable determination of the damage sustained by plaintiff."

#### Corroborative Precedent

For comparison see 24 F. (2d) 329. Here a company manufactured rubber heels and purchased from a seller a certain composition or material to be used in manufacturing rubber heels. The seller sold raw material which rendered the heels unmarketable. Suit was brought by the company for a breach of warranty, and the Circuit Court of Appeals affirmed a judgment in favor of the heel manufacturer which included \$20,000 as damages for loss of good will. The court said:

"It appears that, as the result of defendant's (seller's) action, the plaintiff (manufacturer) put out to the trade about \$750,000 worth of heels which proved unmerchantable. These heels were largely scattered

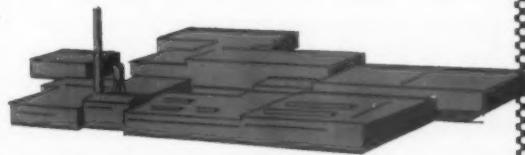


**but stabilized absorbency keeps**

# Fort Howard Paper Towels



**"youthful" all their lives!**



For 33 Years  
Manufacturers of Quality  
Towels, Toilet Tissue  
and Paper Napkins



Fort Howard Paper Company, Green Bay, Wisconsin

'valuable', or 'better' than productions of rival makers, are of this sort."

Therefore, although a seller states verbally or in writing to a prospective purchaser that his merchandise has better quality than that of his competitor, such statement is not an enforceable guarantee.

#### When Purchaser Inspects

Recently a higher court held that if a prospective buyer inspects merchandise, the seller cannot be liable on a guarantee provided the testimony shows that the buyer was an expert or experienced with the kind of merchandise he purchased.

For example, in *Googins v. Hable & Sons*, 237 S. W. (2d) 705, it was shown that a contractor named Googins purchased from the Hable & Sons some heavy construction equipment for which he paid the purchase price of \$48,200 in cash. The equipment purchased included three RD 8 Caterpillar Diesel Tractors, three Le Tourneau Carryalls, One HD 14 Allis Chalmers Diesel tractor; one La Plante Choate Scraper, one Model L, Allis Chalmers Tractor and one Continental 7-yard scraper.

The testimony showed that Googins was a dealer in used construction machinery and was, at the time of the purchase, an expert in his line and particularly on the value and condition of machinery. Further testimony showed that prior to purchasing the equipment Hable told Googins that Hable & Sons was in the process of completely overhauling the machinery for their own purposes and not with the intent to sell and that the company was replacing all worn or defective parts with new or serviceable parts.

At this time Hable invited Googins to inspect the equipment and the work being done and to satisfy himself with regard thereto. Googins had ample opportunity to inspect, and did actually inspect, all of the equipment with the exception of one RD 8 Tractor which it was not then convenient for him to inspect due to the fact that such tractor was, at the time, several miles in the country and the roads were muddy.

After Googins took possession of the equipment he sued Hable & Sons for heavy damages claiming that the equipment was not as had been represented by Hable and Sons.

As the testimony showed that Googins was experienced with such equipment and also that he had inspected it, the lower court held Hable & Sons not liable to Googins. The higher court approved the verdict and said:

"Since the trial court found that defendant (Hable & Sons) was guilty of no fraud or concealment, the effect of such findings was to preclude the plaintiff (Googins) from any right of recovery against defendant."

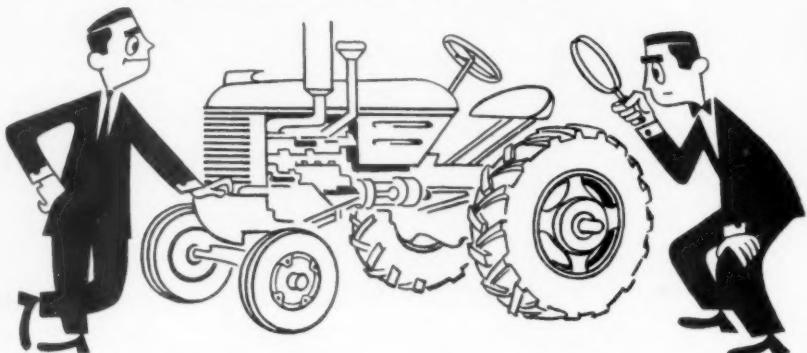
#### "As Is" Guarantee

According to a late higher court decision, a seller *always* is relieved from responsibilities of a guarantee if the testimony shows that either an experienced or inexperienced buyer of merchandise voluntarily

that a purchaser cannot recover damages from a seller for breach of a guarantee unless he proves that actually he was damaged by the seller's breach.

For illustration, in *Moran v. Levin*, 63 N. E. (2d) 334, it was shown a purchaser sued a seller and alleged that the latter defrauded him by misrepresenting the quality of merchandise. However, the purchaser failed to prove any financial losses resulting from the seller's breach and the higher court refused to hold the seller liable, saying:

#### LOOK IT OVER AND SATISFY YOURSELF



WHEN AN EXPERIENCED CUSTOMER INSPECTS MERCHANTISE  
BEFORE BUYING, HE CAN'T CLAIM BREACH OF WARRANTY

took delivery under an "as is" contract. In other words, if a buyer purchases merchandise and relies on his own judgment as to its quality he cannot later complain if the merchandise proves to be unsatisfactory.

On the other hand, the higher courts hold that an "as is" clause in a contract has absolutely no legal effect to relieve a seller from liability under a guarantee, if the seller made certain statements before the contract was signed. Especially is this true if the seller's statements were intended to induce the purchaser to believe that the seller would guarantee the subject of the sale.

For illustration, in *Maddox v. Katx*, 8 So. (2d) 749, it was shown a seller sold merchandise under a written contract of sale which contained a clause that merchandise was being sold "as is". Later the purchaser discovered that the merchandise was defective and not worth the contract price and he sued the seller. The court said:

"The clause 'as is' when used in a contract of sale does not relieve the vendor of all warranty."

Another important point of law is

"A purchaser does not make out a case in an action unless he furnishes a rational and adequate basis for the ascertainment and assessment of the actual damage that resulted from the defendant's (seller's) fraud."

#### Can't Increase Damages

Also, see *Schaefer v. Fiedler*, 63 N. E. (2d) 310. This higher court held that a buyer cannot increase normal damages by continuing to use merchandise which he knows is defective.

In this case it was shown that a purchaser of machinery discovered within a few days that the machinery was not equal to the guarantee given by the seller. However, the buyer continued to use the machinery for several weeks, and later sued the seller to recover all damages he sustained resulting from seller's breach of the guarantee. The higher court refused to allow the purchaser any damages saying:

"The evidence is that after appellee (purchaser) knew that the machine would not work satisfactorily he nevertheless proceeded to use it. . . . But this loss was not the natural and proximate consequence of the



## Get blanks from REYNOLDS

**Speed Production—Save 30% Scrap Loss!**

The aluminum on the Reynolds conveyor happens to be for the product of a well-known manufacturer—but suppose those blanks were for your product? Like this manufacturer, you would use *all* the aluminum you receive...without delay...without scrap loss. In addition, you'd cut important handling, storage space, work space, manpower and inventory costs! There's no costly loss of time, segregation and storing, reshipment between cities or diversion of valuable metal when you buy blanks from Reynolds. You get pounds of parts, not pounds of metal! Scrap, like that beside the press above, is remelted immediately right at Reynolds plants.

Whether you want semi-fabricated blanks, completed parts or final assemblies, you'll find Reynolds extensive facilities and technical assistance of real value. Get quotations on aluminum blanks or parts to your drawings and specifications from Reynolds Aluminum Fabricating Service.

For additional information, write for literature or call the Reynolds office listed under "Aluminum" in your classified telephone directory. Reynolds Metals Company, Parts Division, 2056 South Ninth Street, Louisville 1, Kentucky.

### Reynolds Aluminum Fabricating Facilities

One of the country's most complete facilities for aluminum fabricating includes:

- Over 100 mechanical presses ranging from 2 to 1700 tons.
- Hydraulic presses from 300 to 5000 tons.
- Equipment for shearing, blanking, forming, riveting and welding, roll forming, finishing and assembly.

These facilities can assure a steady flow of blanks or fabricated parts to your specifications and production requirements.



## REYNOLDS ALUMINUM FABRICATING SERVICE

BLANKING • EMBOSsing • STAMPING • DRAWING • RIVETING • FORMING • ROLL SHAPING • TUBE BENDING • WELDING • FINISHING

breach of warranty. It was entirely due to the fact that appellee voluntarily used the machine after he knew that it would not work satisfactorily."

#### Need Not Make Repairs

Other important elements of modern law are: If a seller ships to a purchaser defective merchandise or equipment, the purchaser cannot compel the shipper to repair it. If the purchaser makes necessary repairs he cannot recover damages from the seller.

For example, in *Ginsberg v. Selbest Dress*, 238 S. W. (2d) 621, the testimony showed facts as follows: In June one Ginsberg placed with the Selbest Company, a manufacturer, a preliminary order for a quantity of dresses. Later twelve sample dresses were made up and sent to Ginsberg, and from these samples 900 dresses were made the subject of purchase (300 each of Styles 1700, 1701, and 1702, various sizes and colors).

The dresses were then manufactured by the manufacturer and shipped, reaching Ginsberg in mid-summer. Ginsberg promptly returned 98 dresses of Style 1700, 85

The counsel argued that Ginsberg could not be liable because the manufacturer was liable in damages to Ginsberg for several hundred dollars expended by Ginsberg in anticipation of sale of the entire lot of 900 dresses and \$700 profits lost through inability to fill orders, because the manufacturer refused to repair the defective dresses and return them to Ginsberg, as requested.

It is interesting to note that the higher court held that Ginsberg must pay the manufacturer for the dresses he kept, and further that the manufacturer was not liable in any damages to Ginsberg. The court stated important law as follows:

"Assuming the transaction to be a sale by sample, a buyer cannot rightfully demand a replacement of so called defective goods unless by agreement on part of the seller. The buyer, in such a situation, may reject the goods as not in accord with the sample or warranty, or he may accept same and either offset the purchase price with the difference in value, or recover back any purchase price paid by him; in other words, the purchaser may rescind the contract or else sue in damages for its breach".

damages for the breach of warranty; or

(2) The purchaser may refuse to accept the goods and sue the seller for the sustained damages; or

(3) The purchaser may rescind the sale contract and refuse to receive the goods and sue the seller for damages equal to the purchaser's financial loss resulting from the breach; or

(4) If the goods have already been received, the purchaser may return them to the seller, or offer to return them, and sue for the price which has been paid, plus damages sustained from the breach.

Stating the rule differently, in general terms, all parties to a valid contract are bound to fulfill the precise terms of an agreement, and if one party fails in this respect he performs an illegal act which entitles the other party to do either of these three things:

(1) He may refuse to continue to perform his obligations and sue the other party for damages and profits in an amount equal to his financial loss resulting from the breach; or

(2) He may file suit and compel the other party to fulfill the exact terms of the agreement; or

(3) The parties may mutually agree to cancel the old contract or make a supplementary contract.

#### After Title Passes

For example, in *Bint Company v. Mueggler*, 154 Pac. (2d) 513, it was shown that a purchaser accepted delivery of a machine. Later he discovered that the seller had breached his warranty, and the purchaser sued the seller.

This court held that the legal title to the machine had passed to the buyer and therefore he could keep the machine and recover from the seller the full damages he sustained because of the seller's breach.

Again see *Gildner Brothers v. Ford Hopkins Company*, 16 N. W. (2d) 229. This court held that the purchaser could sue the seller upon discovery of his breach of the contract, and recover damages equal to the difference between the contract and market price of the merchandise on the date the seller promised to make delivery and failed to do so.

#### What Is Breach?

A considerable number of litigations have arisen over the legal question: "When and under what circumstances does a seller breach a sale contract?"

The higher courts hold that a legal breach of a contract is any act in

(Please turn to page 312)



of Style 1701, and 236 of Style 1702, all priced at \$5.29 each, claiming defects and advising that upon repair and return of same they would be accepted subject to prepayment of freight. On arrival of the shipment, the dresses were inspected by the manufacturer. Instead of the manufacturer repairing the defects in the dresses, as demanded by Ginsberg, the manufacturer allowed Ginsberg full credit for the 98 returned dresses and then sued for the balance due on the dresses kept by Ginsberg.

Hence, it is quite apparent that although a seller breaches a valid contract of sale, the purchaser must confine his demands and efforts to definite and legal proceedings.

#### Purchaser's Rights

A review of higher court decisions discloses a definite rule of law which states exactly the legal rights of a purchaser where a purchaser breaches a contract, as follows:

(1) A purchaser may accept and keep the goods and sue the seller for

# CONTINENTAL'S PROOF BOOK



W. N. LARKIN  
Amherst College, B.A., 1937.  
Joined Sargent and Company  
1949 as Assistant Superintendent  
in Lock Division. Became  
Purchasing Agent 1951.

Active member of National  
Purchasing Agents Association;  
Executive Agents Association  
Forum; Quinnipiac Club;  
N. H. Country Club.

SARGENT & COMPANY  
INCORPORATED 1866  
MANUFACTURERS  
NEW HAVEN 9, CONNECTICUT

December 15, 1952

Continental Screw Company  
New Bedford, Massachusetts

Gentlemen:

This is the time of the year when we take inventory. It has always been my practice to take "inventory" of our suppliers and see how they have shaped up and what kind of a job they have done for and with Sargent & Company over the past 12 months. It is certainly a pleasure to inform you that your performance has been among the best.

It is interesting to note that only a few short years ago you received your first order from us and that was for tapered screws. Since that time, because of your performance and quality, you have grown to be one of our major sources for fasteners. When I asked myself why, the answer was clear. You have furnished us with a quality product at a fair price and completely fulfilled your obligation. Whenever we needed a little extra something you went out of your way to take care of our needs.

We sometimes forget that business isn't done primarily by companies but by the people who make up these companies, and your people have certainly made doing business with you a pleasure. It is my sincere hope that this fine relationship will continue to prosper and grow.

Cordially,  
SARGENT & COMPANY

*W.N. Larkin*

W. N. Larkin,  
Purchasing Agent

You too can count on *Continental*™



Manufacturers of **HOLTITE** Fastenings For Every Purpose

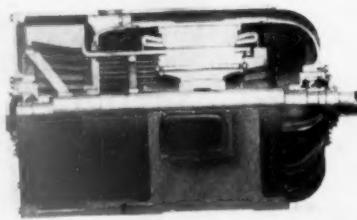
CONTINENTAL SCREW COMPANY, NEW BEDFORD, MASS., U.S.A.



# New Products Ideas



## Fan-Cooled, High Slip Induction Motor



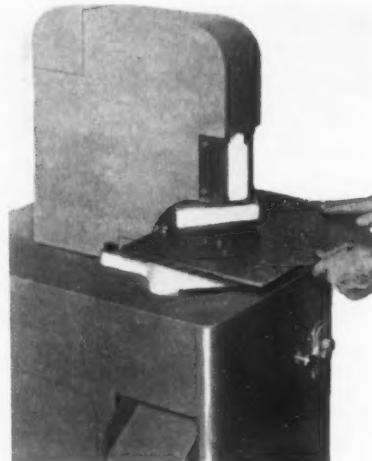
A totally enclosed, fan-cooled, high slip induction motor designed for use in acceleration of high-inertia loads such as punch presses, centrifuges and hoists has been announced by the General Electric Company, Small and Medium Motor Dept., Schenectady 5, N. Y. Called Type KRX, the motor has a new extended-bar design which provides efficient dissipation of the increased heat normally generated by high-slip motors. It is as much as 30 per cent smaller and 40 per cent lighter than conventional totally-enclosed fan-cooled high slip motors.

## New Set Adds Precision To Hand Filing

Precision hand filing is now possible with a set of 18 graded files, micrometer checked to thickness tolerances as low as four ten-thousandths of an inch. The set, made by Tacony File & Hardware Co., 2814 N. 4th St., Philadelphia 32, Pa., is composed of equaling files — no taper in or thickness—4" long and  $\frac{1}{2}$ " wide. Each of the 18 files is a different thickness, ranging from .072" down to .009", said to be the thinnest file made. In use, Tacony

says, each file is more like a hand broach capable of precision finishing. Typical uses include precision slot filing, gap filing of electrical contacts and spark plugs, filing in inaccessible spots.

## Notcher . . . Costs of Dies and Heavy Presses



In some metalworking operations, this Di-Acro power machine for notching sheet material will save a large part of the cost of expensive dies and heavy presses. A notch as large as 6" x 6" can be made in 16 gage sheet steel. Notches both larger and smaller than 90 degrees, as well as some straight shearing jobs, can be performed by making a few simple adjustments. Other advantages claimed: high rate of production (up to 180 strokes per minute); minimum operator fatigue; simple operation; safety; and compactness. Made by O'Neil-Irwin Manufacturing Co., 601 Eighth Avenue, Lake City, Minn.

## Heavy Duty Cylindrical Grinding Machines



Norton Company's new heavy duty plain or semi-automatic cylindrical grinding machines, made in 18", 36", 48" or 72" work lengths, rapidly and accurately perform plunge-cut and traverse grinding operations that require larger diameter or wider grinding wheels than are accommodated by the conventional Type CTU cylindrical grinders. Most important feature of the 10" Type CTU-HD and 14" Type LCTU-HD machines is the heavy wheel head with super-duty size pressure-lubricated wheel spindle for wheels up to 10" wide. High service capacity of the head, combined with rigid work-supporting units and smoothly-operating sliding components assures fast grinding action with enduring precision. Norton is at Worcester 6, Mass.

## Luminaire Cuts Down Sharp Contrasts

Type SDP industrial luminaire made by Westinghouse Electric Corp., Pittsburgh, Pa., will provide more comfortable seeing conditions  
(Please turn to page 130)

# A.O.Smith

# Field-King<sup>®</sup>

2½ KW Auxiliary Power



Construction jobs

Pipeline welding



Available in 200 and  
300 Amp. models

## The gas engine driven welder with the features YOU wanted!

**All-electric dual control** provides continuous, stepless current adjustment with constant engine speed!

**Electric idling control**, unlike other types which can easily clog or get out of order, assures perfect adjustment at all times and practically no maintenance!

**Auxiliary D. C. power** is a full 2½ kilowatts, the largest available in any standard engine-driven machine!

**A rugged machine** with less bulk! A field welder with 25% extra horse-

power that guarantees smoother, easier welding!

**Lighter weight!** The Field King 200-Amp. model, for example, weighs only 985 pounds. This is achieved by modern torsional mounting. This lighter weight means greater mobility and lower shipping costs.

**Greater fuel capacity!** The larger gas tank means a full nine-hour working day without stopping to refuel.

**A safer machine!** Extra baffle plates on

each side of the gas tank prevent accidental fires caused by unintentionally bumping the electrode against the gas tank.

**It's the field welder** you've been asking for . . . now available with the A. O. Smith name, guarantee and reputation behind it.

Contact your A. O. Smith dealer for full details, or write:

A. O. Smith Corporation  
Welding Products Division  
Dept. P-153, Milwaukee 1, Wis., U.S.A.

Made by welders  
... for welders



# A.O.Smith

WELDING PRODUCTS

Welding Products Division, P. O. Box 584, Milwaukee 1  
International Division, P. O. Box 2023, Milwaukee 1, Wisconsin, U.S.A.



HOOK UP  
to A. O. Smith  
Experience

# How to be sure of getting First Grade Rope



130

Please mention PURCHASING Magazine when writing to advertisers.

(Continued from page 128)

in industrial plants. The upward component distributes 23 per cent of the light towards the ceiling, eliminating the severe contrast between bright luminaires and dark ceilings. It uses two slimline lamps of 38, 58 or 75-watts each and is made in one piece porcelain enamel which is easily removable for cleaning.

## Circuit Breaker Fits Edison Base Fuseholders



A miniature "circuit breaker" that fits like a fuse in any standard Edison base fuseholder delivering up to 125 volt a-c service has been introduced by Mechanical Products, Inc., 1824 River St., Jackson, Mich. Called the Mini-Breaker, the device requires no additional equipment and no special wiring when applied to branch or main circuits of corresponding 15, 20, or 30 ampere ratings. Anyone can install it in a matter of seconds, and anyone can restore electrical service simply by pressing in and releasing its shock-proof reset button. It is listed as a "Circuit Protector" and bears the label of Underwriters' Laboratories, Inc., the manufacturer states.

## Stand Simplifies Small Parts Storage

A rotary stand called the Vu-O-Matic is said to simplify the storage and handling of small parts such as nuts, bolts, rings, gears and bearings. Made by the Union Metal Manufacturing Company, Canton, Ohio, the unit is simple and compact consisting of a series of circular trays accommodating glass jars of various sizes. Three standard models available—8-tray, 5-trays and 3-tray equipped with 16, 8 and 4 oz. jars.

PURCHASING

ward  
cent  
ling,  
be-  
dark  
mps  
d is  
mel  
can-



You get that extra  
margin of endurance with

# Thermoid

CONVEYOR BELTS • HOSE • MULTI V-BELTS



Whatever your business you have applications where Thermoid Conveyor Belts, Hose, or V-Belts will do your job better—provide that extra margin of endurance that cuts costs.

Constant improvement and expansion of engineering and production facilities have always been part of Thermoid's program for the past 70 years. The results of this continuous program are rubber products that guarantee you high operating efficiency and superior performance . . . meet the demand for maximum service at minimum cost . . . last longer and require less maintenance.

When you have a design, production or operating application involving Conveyor Belts, Hose or Multi V-Belts, call your Thermoid distributor. In most cases, he can select the size and type that will serve your needs most efficiently. Thermoid Sales Engineers are always ready to help you with special problems.

**It will pay you to specify Thermoid.**

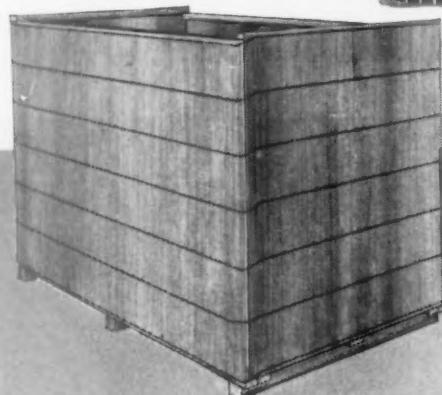


Conveyor & Elevator Belting • Transmission Belting  
F.H.P. & Multiple V-Belts • Wrapped & Molded Hose

Rubber Sheet Packings • Molded Products  
Industrial Brake Linings and Friction Materials

Thermoid Company • Offices & Factories: Trenton, N. J., Nephi, Utah

**HOW WOULD YOU  
MOVE THIS  
PILE OF PARTS?**



it's as costly as this

OR . . .

as efficient as this



**Generalift**

**PALLET BOXES**

Better check today on this versatile, popular container. The Generalift Pallet Box and fork lift truck is a combination that will substantially reduce your materials handling costs! Picture at right shows how many manufacturers are also using Generalift Pallet Boxes for the more economical storage of parts and materials.

Write for your free copy of "The General Box." It illustrates and describes how manufacturers are cutting container costs.



**AMERICA'S FINEST INDUSTRIAL  
PACKAGING LABORATORY**

It is here where more efficient containers are born. We will be glad to study your problem and design a container that best meets your specific needs. Write for complete details.

**General**

**BOX COMPANY**

**GENERAL OFFICES:** 1843 Miner St., Des Plaines, Ill.

**DISTRICT OFFICES AND FACTORIES:** Cincinnati, Denville, N. J., Detroit, East St. Louis, Kansas City, Louisville, Milwaukee, Sheboygan, Winchendon. General Box Company of Mississippi, Meridian, Miss. Continental Box Company, Inc. Houston, Dallas

**ENGINEERED SHIPPING CONTAINERS FOR EVERY SHIPPING NEED**

- Wirebound Crates and Boxes • Generalift Pallet Boxes • Generalite Beverage Cases
- Cleated Corrugated and Watkins-Type Boxes • All-Bound Boxes • Corrugated Boxes

**Compact Fork Truck**



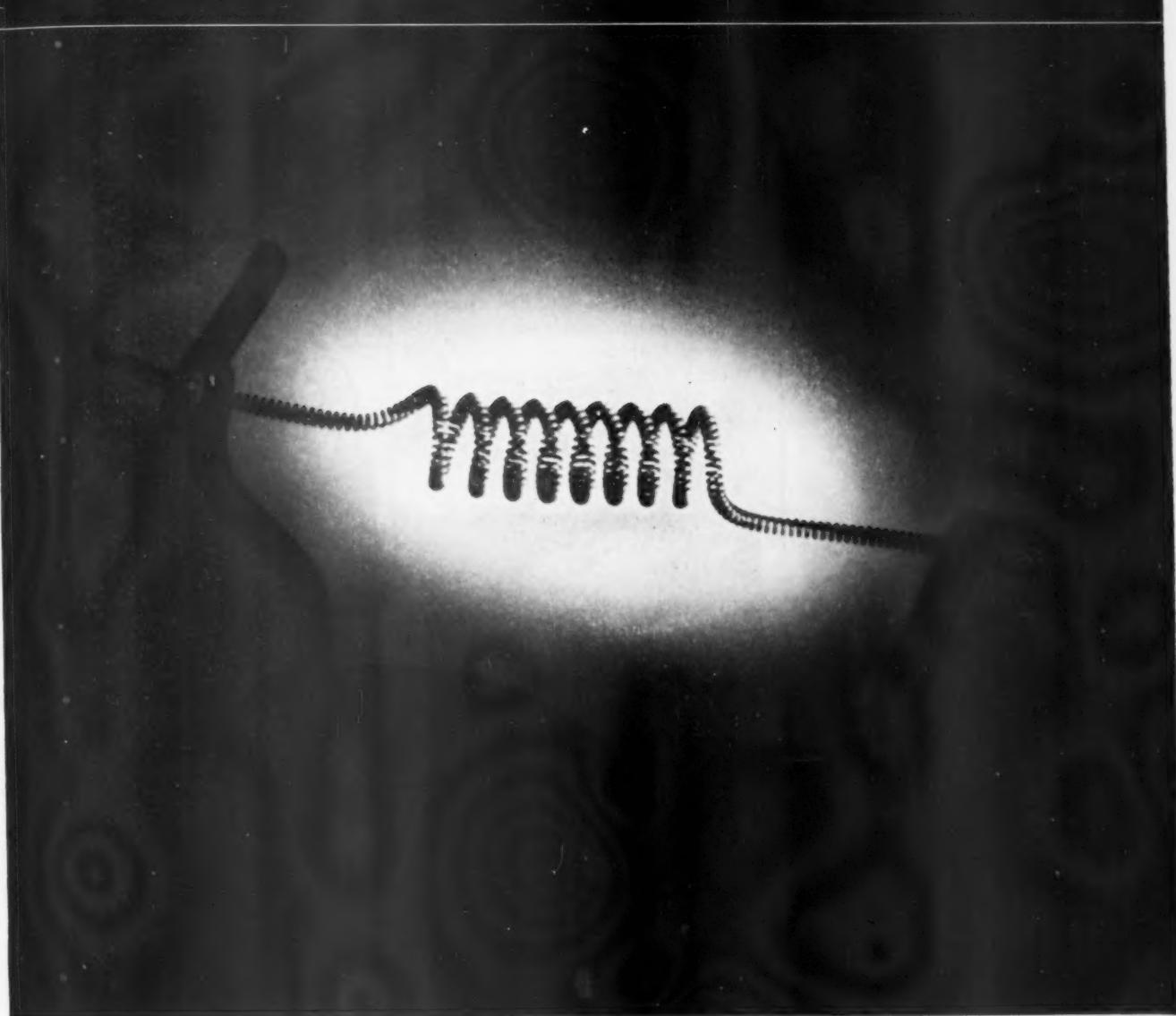
The Mercury Manufacturing Company, Chicago 9, Ill. has brought out a new short turning compact fork truck chassis of 3,000 lbs. load rating at 24" load center. Designated Model A-3444, the unit has a short turning radius which permits right angle stacking in a 10' aisle with a 48" long load. Other features of the unit include: double reduction drive assembly, compensating controlled castor type steering axle and automotive wheel type steering control.

**Load Protectors Prevent  
Damage in Transit**

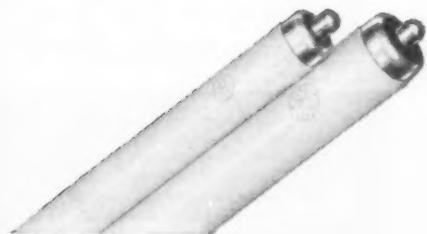


Two pieces hinge-lock together to make the unit, the metal "Hinge-Guard" load protector, which will angle from 90 to 180 degrees. They can be used singly by just lifting apart. They accommodate chain or cable up to and including  $\frac{1}{2}$ ". If grab-hook is already secured to chain, it will thread through the unit. Illustration shows use of protectors in transporting sheet coils and heavy crating. Any chain or cable contact with the load is prevented. Also allows increased chain tension, making loads more compact and less likely to shift. 3 lb. unit is made by Canton Manufacturing Company, 2408 13th Street N. E., Canton, Ohio.

You expect the best value from G-E fluorescent lamps



**Extra twist squeezes more  
light from G-E slimline lamps**



The electron flow that lights a fluorescent lamp is started by a special chemical mix held on tungsten filaments at each end of the lamp. How long the lamp lasts depends in part on how long the chemical clings to the filament. In most lamps, the filament is twisted into a double coil, to hold a quantity of the mix in a firm grip.

General Electric goes a step further by giving the double coil a third twist—making a triple coil. Used in G-E slimline and other G-E instant-start lamps, the triple coil holds more mix, and holds it more firmly. It gives you extra light for your money because it makes the lamps last longer. This is another example of why you can expect the best value from G-E fluorescent lamps.

*You can put your confidence in—*

**GENERAL ELECTRIC**

# ELIMINATE GLUING TIME *-cut costs!*



use **SEGMENTED  
felt tapes**  
with **ADHESIVE BACKS!**

PRC segmented tapes are defeating problems every day on assembly jobs requiring repeated use of equal-sized felt pieces. Each segment is as easy to tear off as a postage stamp from a roll. This cuts costly waste motion... saves time with each piece used. Segments of predetermined sizes also eliminate material waste. Adhesive back (either pressure-sensitive or solvent-activated) assures fast, positive application.

#### Is this your problem...

- Protection against corrosion?
- Protection against dissimilar-metal corrosion?

PRC Sealing tapes have special protective properties which safeguard your product against deterioration. Many sizes and impregnations are available for your specific needs.



Write for descriptive literature.



**PRODUCTS RESEARCH CO.**  
MFRS. OF CHROME LOCK AND KLING FELT TAPES  
SUITE 11, 3126 LOS FELIZ BLVD.  
LOS ANGELES 39, CALIFORNIA

## Unit Recovers Coolant Oil From Mist and Smoke

The Precipitron oil mist control unit, just redesigned by Westinghouse Electric Corporation, will recover the coolant oil from the mist and smoke generated by high speed cutting, grinding, milling, and similar machining operations. Other advantages offered are: reduction in hazards such as slippery floors, danger of fire, contaminated atmosphere; saving in heating costs; improvement in employee attitude that comes from working in clean surroundings; reduction in building maintenance costs by preventing oil and smoke deposits. The unit is completely self contained. Type PO-6 has an air handling capacity of 600 cfm; Type PO-12 of 1200 cfm.

## Packaging Machine For Small Parts



Fast, automatic and completely uniform packaging of small parts the Government wants in 1-A3 type packaging, such as used for O-rings, small gaskets, etc., is possible with this new packaging machine announced by the Pen-Mac-Nye Company, Akron, Ohio. The machine, adaptable to runs of 2,000 or more, differs from conventional packaging machines in that it identifies parts as it packages them, thus eliminating pre-printing and labels.

## Solvent Cleans Motors and Generators

Plants with motor-cleaning problems will find good use for a new solvent called the Shaler generator-motor cleaner which cleans electric motors and generators while they are still assembled. The cleaner does not affect wiring or insulation which is gasoline- or oil-resistant and has reduced time and expense in cleaning operations where it has been put to use. Available from The Shaler Company, Waupun, Wisconsin.

sure that shipment will arrive on time,  
Ted - we always

# SPECIFY P.I.E



## Modern Motor Freight

minimizes all your problems—assures safe, dependable delivery—"door-to-door."

Whether you are on our cross-country line between California and the Midwest, or reached through off-line connecting carriers, your supplier knows you're on the beam when you

"Specify P.I.E!"



**P.I.E**  
PACIFIC INTERMOUNTAIN EXPRESS

Chicago • St. Louis • Kansas City • Wichita  
Denver • Ogden • Elko • Reno • Ely • Pocatello  
Salt Lake City • San Francisco • Los Angeles  
Sacramento • Oakland • Stockton

Sales Offices: Washington, D.C.  
GENERAL OFFICES: 299 ADELINE STREET  
OAKLAND 20, CALIFORNIA

## Engineers to Discuss Design Improvements

Engineering reports on recent design improvements will be presented at the annual meeting of

## Quality Control Clinic Starts Here Today

Representatives of 103 manufacturing concerns from sixteen states meet at the Hotel Kendall today to discuss new developments in the practical application of

proves product quality by plotting tolerance deviations graphically.

Mr. Baker also said that the practical application of statistical methods for industry requires greater understanding.

## Roger Metals to Launch Special Ad Campaign

Stanley A. Rogers, president of the Rogers Metals C

announced yesterday that across the board scheduling of the resident company and the Metal Smelters into the thodox Rogers and greater estate denting.

## CASTLE CO. GRANTED PRICE RISE

BOSTON, Jan. 11—The Office of

## What's news to a top P.A.?

HE may read his paper all the way through from the weather report to the comics. Or he may be the "skimmer" type. But we feel sure a top purchasing agent would read these four news items.

He's interested in new engineering developments that may result in better service from other companies to supplement his own company's engineering skill.

He's interested in how the quality of component parts he may buy affects the sale of products.

He's interested in a company's increased advertising, since he knows the advantages of using parts that enjoy wide public acceptance.

As a buyer, he's interested in price hikes.

Only by taking all four factors into account can you determine the true value of the parts you buy. And price alone is far outweighed in importance by the other three. Here's a simple formula that shows you why:

$$\text{Value} = \frac{\text{quality} + \text{service} + \text{public acceptance}}{\text{price}}$$

In tapered roller bearings, your best value is Timken® bearings. They give you the finest quality, the best engineering service and the widest public acceptance. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".

**TIMKEN**  
TRADE-MARK REG. U. S. PAT. OFF.  
TAPERED ROLLER BEARINGS



NOT JUST A BALL □ NOT JUST A ROLLER □ THE TIMKEN TAPERED ROLLER □ BEARING TAKES RADIAL AND THRUST LOADS OR ANY COMBINATION



## P.A. Notes:

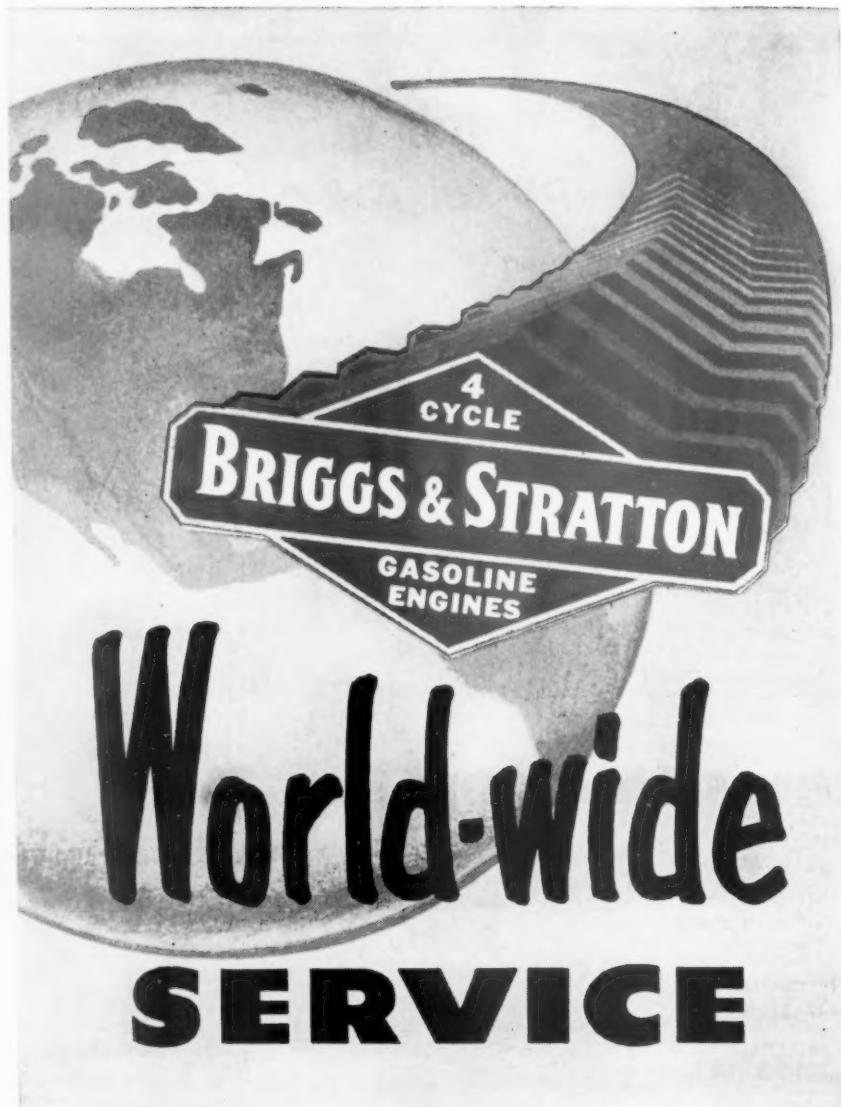


PRECISION PLUS is assured in Timken bearings by testing procedures like the one above. In a sound proof room, bearings are placed on an instrument that "hears" imperfections. The bearing is discarded if a foreign noise is heard.

**BIBLE FOR BEARING BUYERS.**  
This new engineering journal is one of the extra services you get from the Timken Company. It lists 26 different types, 5850 sizes. Helps your engineers select the right bearing for every application.



**KNOWN BEST—LIKED BEST.** More than 1000 manufacturers use this "Timken bearing equipped" label. Its story of extra value will help sell your product, too.



**THE GREATEST SERVICE ORGANIZATION  
OF ITS KIND IN THE WORLD . . .**

Near you there is a Briggs & Stratton service organization — factory trained and supervised — ready to tune up, repair, or even rebuild your Briggs & Stratton engines with *original* Briggs & Stratton parts.

If your Briggs & Stratton engines are not busy during these winter months, now is the ideal time to have them serviced — to insure continued peak performance for busy periods ahead.

Only Briggs & Stratton maintains such complete world-wide authorized service facilities — a big "plus" that you get only when you specify Briggs & Stratton engines on the gasoline powered equipment you buy.

Briggs & Stratton Corporation,  
Milwaukee 1, Wisconsin, U. S. A.



In the automotive field Briggs & Stratton is the recognized leader and world's largest producer of locks, keys and related equipment.

**Tool Grinder Sharpens All Modern Metals**



A new precision tool grinder, using 6" cup type wheels, sharpens any of the modern tool materials such as sintered carbides, cast alloys and high-speed steels. The maker, Ex-Cell-O Corporation, says its smoothness and true-running characteristics make it especially suitable for grinding carbide with diamond wheels. It is capable of sharpening all sizes of boring, turning and facing tools up to  $\frac{5}{8}$ " square or equal cross-sectional area. Features include a heavy steel base which has ample height for operator convenience, large U-shaped tool rests rigidly supported, and hardened steel wear plates. Ex-Cell-O is at 1200 Oakman Blvd., Detroit 32, Mich.

**Goggles Fit Over New Type Spectacles**



Larger cover goggles to fit over modern glasses have been introduced by the Chicago Eye Shield Company, 2300 Warren Blvd., Chicago, Ill. Known as Series 548 and 549, they are 20% larger than previous models. They are available for both chippers and welders. Wider bearing surfaces in the molded plastic frames eliminate pressure points, and provide a perfect seal. (Please turn to page 140)



# NIBROC<sup>®</sup> TOWELS

# "A KNOCKOUT FOR DRYING HANDS!"

"These Nibroc towels are really a knockout for drying hands," the distributor's salesman said.

"Nibroc towels soak up water fast, yet not at the sacrifice of softness or strength. Everything you want in a towel—fast, thorough drying—pleasing softness—wet-strength—freedom from lint—is found in Nibroc in a perfectly balanced combination."

"That's what makes Nibroc the world's largest selling paper towel for industrial and institutional use!"

## SPECIFY NIBROC TOWELS

*They Dry Drier—Faster!*

BROWN



COMPANY, Berlin, New Hampshire  
CORPORATION, La Tuque, Quebec

General Sales Offices: 150 Causeway Street, Boston 14, Mass.  
Dominion Square Building, Montreal, Quebec

SOLKA & CELLATE PULPS • SOLKA-FLOC • NIBROC PAPERS • NIBROC TOWELS • NIBROC KOWTOWLS • BERMICO SEWER PIPE, CONDUIT & CORES • ONCO INSOLES • CHEMICALS

**Economical, too!** Because one Nibroc towel dries both hands, fewer are used. Nibroc towels go further, last longer—cost less in the long run.

**A Towel for Every Need.** Singlefold or multifold, white or buff.

**Dispensers Require Less Servicing.** Sparkling white enamel Nibroc cabinets hold up to 50% more towels—are easily mounted to wall without drilling.

**Mail Coupon For FREE WASHROOM POSTERS**  
**emphasizing importance of personal**  
**cleanliness and washroom sanitation.**



BROWN COMPANY, DEPT. NG-1  
150 Causeway St., Boston 14, Mass.

Please send me free washroom posters and data on Nibroc cabinets and Nibroc towels.

Name \_\_\_\_\_

Title \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_



Scientific minds at H. H. Buggie,  
And Company are constantly  
at work with electronic

*research*

to make possible advanced

*design*

and outstanding features of

*engineering*

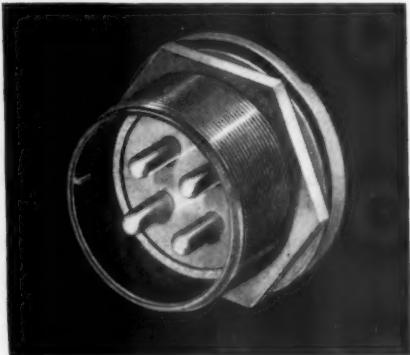
all of which is supplemented by  
skilled craftsmanship in

*manufacturing*

to provide outstanding products  
including . . .

### CONNECTORS, CABLE ASSEMBLIES and COMPONENTS for America's electronics industry

AN Types  
RF Types  
Rack and Panel  
Cable Assemblies



IN ADDITION to the products listed above,  
H. H. Buggie And Company designs, engineers  
and manufactures many special parts and assemblies  
for companies in the field of electronics.  
We invite your inquiries.

**H. H. BUGGIE  
And Company**

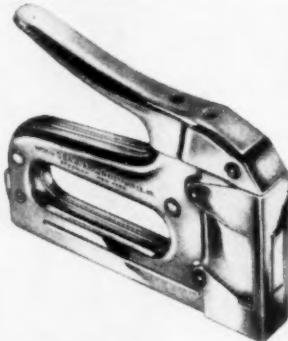
TOLEDO 4, OHIO

Sales Engineers in All Principal Cities

Skilled in Electronic Component Parts  
**RESEARCH • DESIGN  
ENGINEERING  
MANUFACTURING**

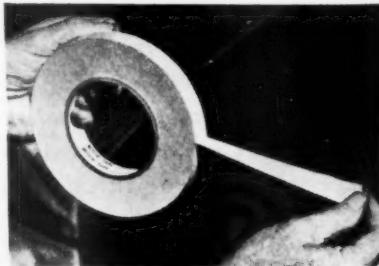
(Continued from page 138)  
which keeps out flying particles or  
light flashes. Cesco says another  
feature in the chippers' goggle is in-  
direct ventilation through the slot-  
ted lens rings. Welders and dust  
models are indirectly ventilated  
through side shields. Both models  
have considerably larger air space  
within the goggles to reduce  
fogging.

### Tacker Shoots Heavier, Longer Wire Staples



Arrow Fastener Company's new  
T-50 gun tacker shoots heavier,  
longer, patented wedge-pointed  
high gage carbon steel wire staples  
(up to 9/16" leg length) than previous  
models. It fits the contour of  
the hand, and the 1 1/4" movement at  
extreme point with total spread of  
2 1/16" affords the user faster, easier  
tacking. A special mechanism pre-  
vents jamming or clogging of staples.  
Working parts can be easily dis-  
mantled and cleaned. Arrow is at  
1 Junius Street, Brooklyn 12, N. Y.

### Masking Tape With Rubber Compound Backing



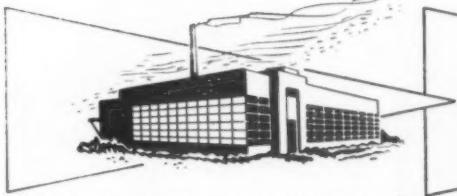
A pressure-sensitive tape, known  
as Mystik Brand Thinflex Masking  
Tape No. 6207, is said to be unusually  
thin, flexible and tough. The  
backing made of cellulose fiber  
saturated with a special rubber  
compound is fully creped. It is  
claimed to be in "perfect balance"  
with adhesive strength, so that tape

(Please turn to page 144)

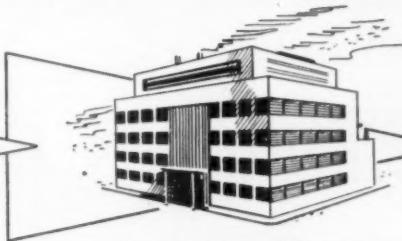
.. by ordering **COLUMBIAN VISES**  
 from your  Industrial Distributor  
 you always save time - and time is money!

For 65 years, America's Industrial Distributors have been efficient, friendly links between The Columbian Vise & Mfg. Co. and its industrial customers. In your community, as in others throughout the nation, Columbian is represented by a local distributor who is eager to help you.

We urge you to avail yourself of this distributor's services . . . to take advantage of his experience, knowledge and personal "on-the-job" interest in your business. You'll find his organization ready to save you time, money — and worry!



The Columbian Vise & Mfg. Co. ▶



Columbian Distributor ▶



Industrial Consumer

## Here Are 8 of the Many Ways You Save With Columbian Distributor Service



**BETTER VALUES.** Your Distributor buys in large quantities and passes his mass purchasing savings on to you. He relieves Columbian of the cost of warehousing, selling and shipping in small quantities . . . eliminates the necessity for our handling the accounts of thousands of individual customers. Because we save . . . you save.



**SUPERIOR PRODUCTS.** Before he stocked Columbian Vises for resale to you, Your Distributor compared them feature by feature against competitive products. In effect, he "pre-tested" for you.



**TIME SAVINGS.** In addition to Columbian Vises, Your Distributor stocks thousands of other items essential to your daily operations. You make one phone call . . . get one invoice . . . pay with one check . . . streamline your purchasing and accounting.



**LESS INVENTORY IN YOUR PLANT.** Your Distributor always has Columbians in stock ready for your call.



**IMMEDIATE DELIVERIES.** Your Distributor gives local "fire department" round-the-clock service. He's at your call — day and night.



**DEMONSTRATIONS.** Your Distributor prefers to sell by showing you exactly what a Columbian Vise (or other product) will do on your job. As a result, you get exactly what you want and need.



**FRIENDLY COUNSEL.** Because Your Distributor serves many plants . . . solves many problems, he possesses a vast store of application knowledge and experience. He is always glad to share this "know-how" with you.



**DOUBLE GUARANTEES.** Your Distributor backs our Columbian guarantee with his own. He gives you double assurance that you are buying the world's finest vises.

A-6384

# COLUMBIAN

Vises

The Columbian Vise & Mfg. Co.  
 CLEVELAND 4, OHIO



ALSO MANUFACTURER OF COLUMBIAN-STEVENS LEVELS

DISTRIBUTORS EVERYWHERE



*assure faster, low cost  
production with ...*



Profit from the production advantages assured by the *uniform* machining properties of WYCKOFF Cold Finished Steels. Constant uniformity of physical characteristics from bar-to-bar and lot-to-lot is accurately maintained by positive quality control methods. We have four conveniently located works to serve you, so, make your next Cold Finished Steel WYCKOFF.

**WYCKOFF STEEL COMPANY**  
SPECIALISTS IN COLD FINISHED STEELS EXCLUSIVELY  
FIRST NATIONAL BANK BUILDING, PITTSBURGH 30, PA.  
3200 SOUTH KEDZIE AVENUE • CHICAGO 23, ILLINOIS  
Works: Ambridge, Pa. • Chicago, Ill.  
Newark, N.J. • Putnam, Conn.



(Continued from page 140)  
holds positively yet strips off fast in one piece. Following advantages are claimed: speed of handling; no residue; sharper paint separations; and satisfactory performance under adverse weather conditions. Manufactured by Mystik Adhesive Products, 2635 North Kildare Avenue, Chicago 39, Illinois.

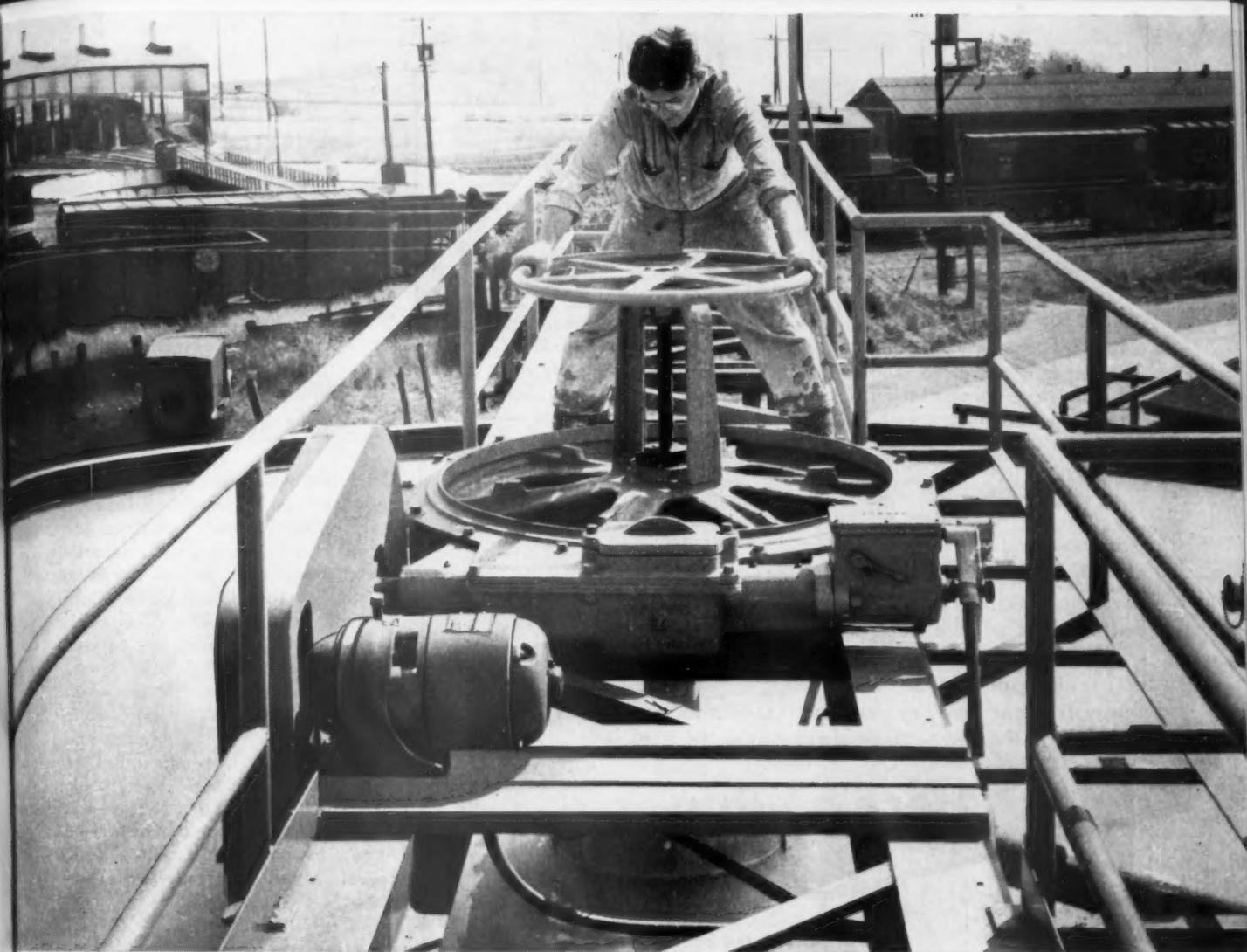
#### Gloves Protect Fingers Against Crushing



A glove with extra-long leather fingers and a five-eighths inch steel ball stitched securely into the end of each finger is offered by the Boss Manufacturing Company, Kewanee, Illinois. It is designed for handling heavy metal sheets and shapes, and is available in two styles—No. 1501 with a 5-inch gantlet cuff and No. 1502 with a 2½ inch safety cuff. Sample orders for single pairs are being accepted by the manufacturer.

#### Cold Cleaners for All Metal Parts

Industrial metal cleaning can be done simply and efficiently with "cold cleaners", Houghto-Clean 439 and 440, developed by E. F. Houghton & Co., 303 W. Lehigh Ave., Philadelphia 33, Pa. They remove such soil as heavy drawing oils, pigmented drawing compounds, sulphurized cutting oils, rust preventives, and polar type smuts from ferrous metals, copper and brass, used at room temperature in power washers. Because no heat is required, company states operating and maintenance costs are lowered. Other advantages are: elimination of exhaust fans, stacks, etc.; long lasting stability; protection against rust; simplicity of preparation and use. Descriptive booklet is available upon request.



THIS G-E GEAR-MOTOR WAS PICKED TO RUN A SLUDGE ACCUMULATOR 24 HOURS A DAY AND 7 DAYS A WEEK BECAUSE . . .

## New G-E Gear-motor Reduces "Down-time"

**Easy stator removal, use of Tri-Clad\* motors, cuts maintenance costs and time more than 50%.**

G-E Gear-motors are single units—compact and efficient—the most economical method of gear reduction for low-speed drives. This year, they have been redesigned to offer you additional operating economy.

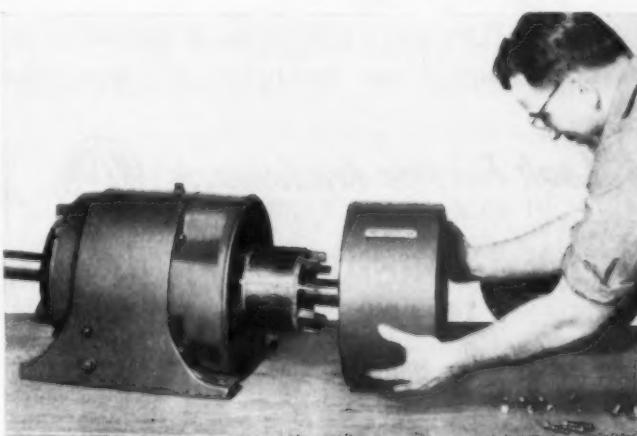
**EASY STATOR REMOVAL** is now possible without disturbing the gear-train in any way. Also, any standard G-E motor—with or without feet—may be used as a stator replacement. These advantages mean a reduction of non-productive "down-time"—and substantial cost savings!

**TRI-CLAD MOTORS** are now an integral part of every G-E Gear-motor. These are the same motors which have gained such a wide acceptance throughout industry—the motors which assure you of extra reliability—triple protection against physical damage, electrical breakdown, and operating wear and tear.

A new stocking plan keeps most popular ratings available on a 1-week basis. You can order your gear-motor from your nearest G-E Apparatus Sales Office or your Authorized G-E Agent or Distributor. General Electric Company, Schenectady 5, N. Y.

755-10

\*Registered Trade-mark of General Electric Company



**Rabbet fit** between stator and gear-motor frame assures positive realignment. Note that stator removal is simply a matter of removing a few bolts—can be done without disturbing gear-train.

**GENERAL**  **ELECTRIC**

# NO!



Here, conventional U-Bolt clips are properly applied but rope is distorted and subject to life-shortening strains under load.

# NO!



Inexperienced workmen can easily put conventional U-Bolt clips on incorrectly with saddles not on load-line. Result: Weakened rope — risk of accidents.

Both halves of the Laughlin Safety "Fist Grip"\*\* clip are identical. There is no wrong way. The most careless workman can't put 'em on wrong (unless he forgets to tighten the nuts). And they're not only safer and practically fool-proof, but they're a darn sight easier to use.

## Here's why:



Nuts are out in the open, can be tightened with any wrench, and don't have to be "inched around."

Bolt ends are shorter and don't get battered or bent. Nuts are always easy to remove when clip is to be re-used.

No crushed rope ends under "Fist-Grips" to cut off. Rope saved.

Fewer clips are required in many installations, so there is less work to do.

**"Fist-Grip"** Clips are just one example of many LAUGHLIN EXCLUSIVES in design, safety and quality that make Laughlin your best buy in wire rope and chain fittings.

Look for the trademark  to be sure

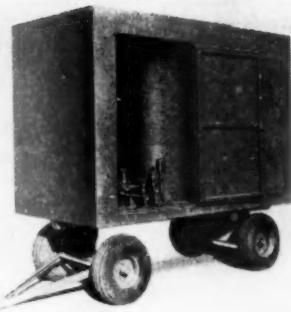
THE THOMAS LAUGHLIN COMPANY  
14 FORE ST., PORTLAND, MAINE

# LAUGHLIN

THE MOST COMPLETE LINE OF WIRE  
ROPE AND CHAIN FITTINGS

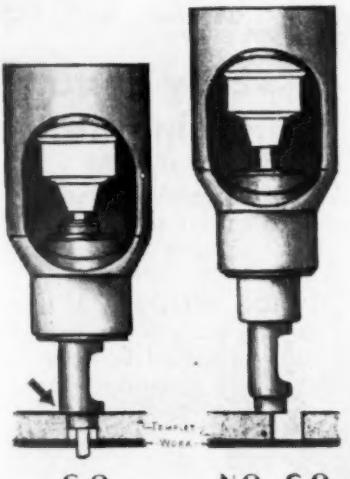
\*Patented, T.M. Reg.

## Unit Purifies Oil In The Field



This compact mobile oil purification system is for purifying insulating oil quickly and easily in the field. The unit illustrated was constructed especially for a chemical company by the Honan-Crane Corporation, Lebanon, Ind. The complete system is housed in an all-metal trailer equipped with hitching device and four pneumatic tires. It can be easily transported to transformers, circuit breakers and other electrically operated oil-filled equipment. It includes a portable insulating oil purifier, pump and motor, 7½ kva transformer, line strainer, bv-pass valve, pole switch, integral piping, wiring and controls.

## Safety Drill Guide

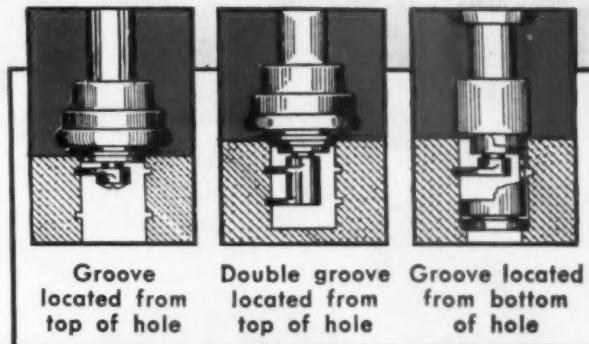


The Sheldon safety drill guide is designed for accurate and fast drilling with the added safety factor of protecting template and work from damage due to improper or careless drilling. It permits the worker to locate the drill perfectly in the template hole before the drill tip can make any contact. No bodily injury (Please turn to page 150)

# Waldes Truarc Internal Grooving Tool

for precision cutting of internal grooves  
in bores and housings

**FAST! ECONOMICAL! NEEDS NO SKILLED LABOR!**

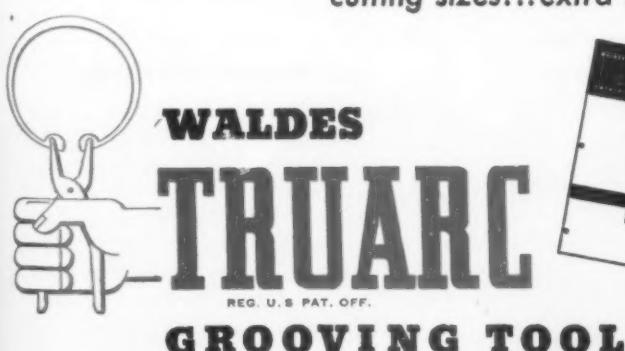


Internal groove-cutting becomes the simplest of operations with Waldes Truarc Internal Grooving Tool. Easy to adjust—easy to operate...readily adaptable to individual requirements.

Designed for use in any hand drill or automatic drill press and screw machine... assures a concentric recess without injury to metal. Operates by fingertip pressure—especially suitable for unskilled operators.

The Waldes Truarc Grooving Tool when used in an electric or pneumatic hand drill, can be taken to the job eliminating disassembly and excessive handling...resulting in all-around savings in time and costs!

Write now for new 12-page Catalog giving mechanical details,  
cutting sizes...extra features...full information



WALDES KOHINOOR, INC., 47-16 Austel Place, Long Island City 1, N.Y.  
Waldes Truarc Grooving Tool  
Manufactured under U. S. Pat. 2,411,426



Waldes Kohinoor, Inc., 47-16 Austel Place  
Long Island City 1, New York P.O. 15

Please send me your new 12-page Catalog  
on Waldes Truarc Internal Grooving Tool.

Name \_\_\_\_\_

Title \_\_\_\_\_

Company \_\_\_\_\_

Business Address \_\_\_\_\_

City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_



tures, we are confident the specialized knowledge of our engineers can produce the right answer — the first time!



Long experience in precision techniques, plus alert, progressive thinking enables ACUSHNET to accept the challenge of any problem — any new application, requirement or development of molded rubber parts. Your inquiries will be given prompt study and recommendations.

*Send for your copy of the new "Acushnet Rubber Handbook"*

**Acushnet**  
PROCESS COMPANY



Address all communications to 770 Belleville Ave., New Bedford, Mass.

At all times our Engineering Staff welcomes the opportunity of working with you on the design, development, improvement or production of "precision" molded rubber parts.

Whether the required part is complex in design or must overcome problem conditions involving fluids, gases, friction, flexing, high or low temperatures,

(Continued from page 146)  
can be sustained due to accidental contact with the tool. Since only perfectly centered holes can be drilled, no expensive drill bushings or template replacements are necessary. Templates can be made of steel, aluminum, pressed hardwood, plywood, etc., yet retain their original accuracy through innumerable drill operations. The device is made by Bell Electric Co., 1844 W. 21st St., Chicago 8, Ill.

#### Operator May Walk or Ride New Tractor



Tractor manufactured with either a 12 Volt or 18 Volt battery, enables operator to walk and load on short hauls and ride when the run is longer. The 12 volt tractor, 27" wide and 48" long has 2 speeds with maximum speed of 3½ mph. The 18 volt tractor is 31" x 48" with 2 walking speeds, and a third speed allowing a maximum speed of 4½ mph. Operating handle automatically goes to upright position when released, sets the brakes and cuts the motor. Short wheel base enables minimum turning radius. Cushion rubber tires afford smooth ride and lessen fatigue. Operator can enter from either side and guard rails protect him both front and rear. Manufacturer is the Moto-Truc Company, 1968 East 59th Street, Cleveland 3, Ohio.

#### 800 Ampere Transformer

General Electric has added an 800-ampere unit to its line of JKP-O indoor-outdoor butyl-molded transformers. The type JKP-O current transformer line is now available in ratings of 200:5, 400:5, 600:5, 800:5. The new transformer has a 150% continuous rating. Type JKP-O transformers are applicable to both single-phase and three-phase circuits, and installations can be made outdoors on poles and walls, and indoors in boxes and on walls. GE's Meter and Instrument Department is at Schenectady 5, N. Y.

Circuit Break

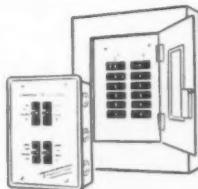
Select Trumbull  
TQL Plug-in  
Circuit Breakers  
for...  
UNIFORM STANDARD SIZE  
HIGH STANDARD PROTECTION

Trumbull TQL Plug-in Breakers from 10 through 50 amp. ratings are all made to the same standard dimensions — physically interchangeable not only in Trumbull Load Centers and Panelboards but also dimensions of these breakers have been adopted by leading manufacturers. This means convenience, economy and time saving for the contractor or plant electrician.

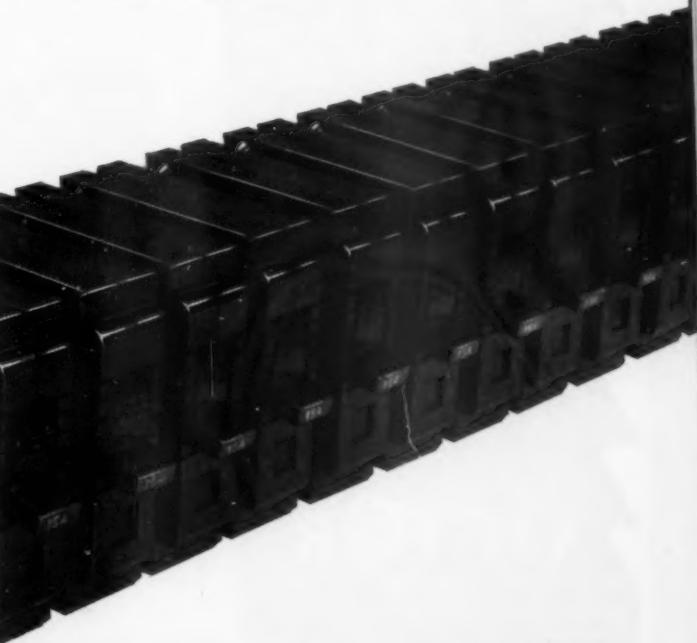
Trumbull also sets the quality and safety standard with a thermal-magnetic trip for positive protection against both shorts and sustained overloads. Compact and economical to buy and install. They pay for themselves because they are built to last a lifetime. They pay big dividends in letting you restore service quickly after short or overload is corrected. They may well save a capital investment by prevention of overheated circuits.

## Quick Facts

- Quick-make, Quick-break
- Trip indicating, trip free handle, with stamped rating
- Positive arc-quenching and extended exhaust chamber
- Tamperproof, sealed factory calibration
- Double pole operation with handle extensions
- Underwriters' Laboratories Approved for feeding through line or load terminal
- Ratings: 10, 15, 20, 30, 40 and 50 amp., 120 volt A.C., single pole
- Interrupting ratings: 5000 amp., 120 volt A.C., single pole; 120/240 volt A.C., double pole
- Size: 2-27/32 x 31/32 x 2-15/16 (over handle)



Leading Electrical Distributors everywhere stock Trumbull equipment. See your local Trumbull Distributor for top values and alert service. For complete descriptive literature, write for TEB-12.



TRUMBULL  ELECTRIC

DEPARTMENT OF GENERAL ELECTRIC COMPANY  
PLAINVILLE, CONN.

**cut power  
blade costs  
at least 15%  
with**

## **VICTOR** "Moly"® Blades

Yes, that's right—when you order VICTOR Moly Power Blades from your Distributor, you cut your initial blade cost 15%, and you'll get extra economies through faster, more efficient cutting and longer blade life.

Over the years, quality has made VICTOR Blades the blades industry prefers.

### **YOUR DISTRIBUTOR HAS VICTOR BLADES IN STOCK**

For VICTOR Blades—as well as hundreds of other products you regularly buy—your Industrial Distributor is the man to call. He is close to your problems. He gives you fast service. He has the assistance of trained factory representatives in solving many of your every day production problems. Buy all you can from him.

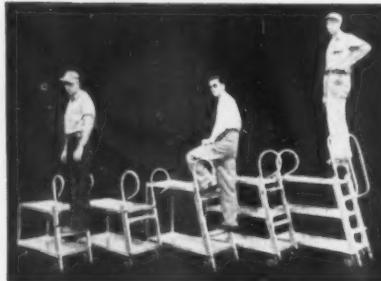
*VICTOR Hand and Power Hack Saw Blades Are Sold Only Through Recognized Distributors.*

**VICTOR**

SAW WORKS, INC. • MIDDLETOWN, N. Y., U. S. A.  
*Makers of Hand and Power Hack Saw Blades,  
Frames and Metal Cutting Band Saw Blades*

1824

### **Step Ladder Makes A Firm Brace For Truck**



A new line of "Stock Picker" trucks designed for filling orders or stocking shelves with small parts or packages is offered by Rol-Away Truck Company, P. O. Box 1921, Portland 11, Ore. The models, all of which are of all-aluminum construction, have a patented step ladder on one end which works on a spring principle, sliding down and making a firm brace for the truck. The line now includes five models—two sizes with one-step ladder, two sizes with two-step ladders, and one model with a three-step ladder.

### **All-Magnesium Skid For Drum, Barrel Handling**

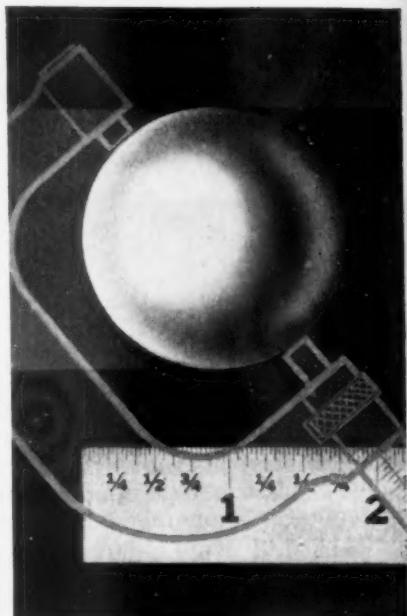


This all-magnesium barrel skid for drum and barrel handling combines extreme light weight and ease of handling, with certified, capacity-rated strength. Available in standard sizes, ranging from 5 feet to 18 feet in length, the unit speeds the handling of drums and barrels and reduces the risk of lifting injuries. Made by Magline Inc., Mercer Street, Pinconning, Michigan.

**SEE CLASSIFIED SECTION  
PAGE 332**

### **ONLY A BALL**

**has { one dimension  
one surface**

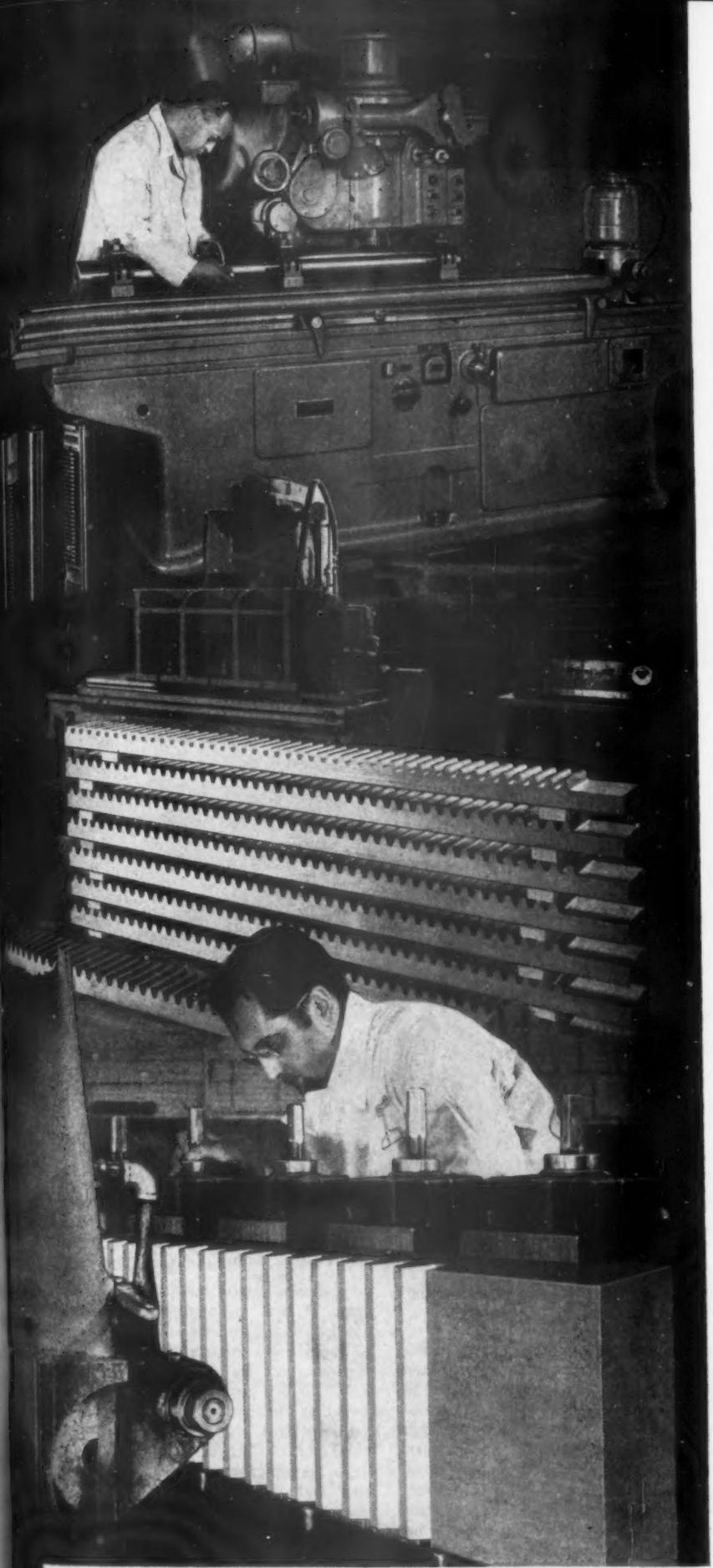


### **but oh—how important**

Important not only in precision ball bearings, but also in the lot of other applications where Strom metal balls have been doing the job better. Strom has been in on a great many ball-application problems, and knows how important these two factors are for the best results.

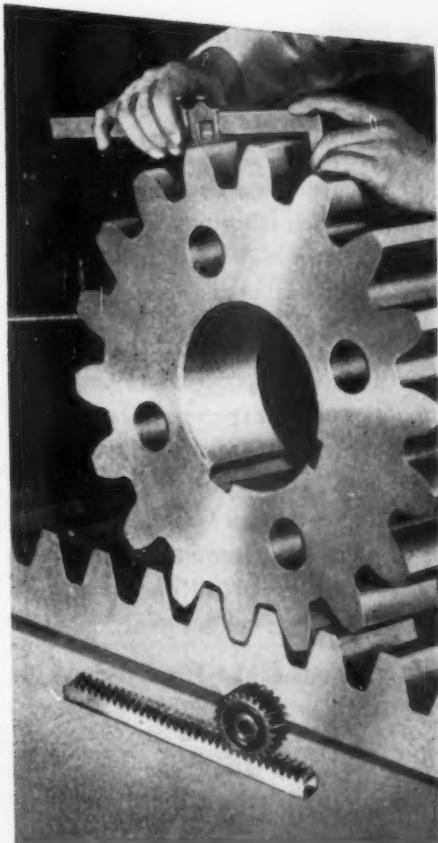
Strom has been making precision metal balls for over 25 years for all industry and can be a big help to you in selecting the right ball for any of your requirements. In size and spherical accuracy, perfection of surface, uniformity, and dependable physical quality, there's not a better ball made.

**Strom**  
**STEEL BALL CO.**  
1850 South 54th Avenue  
Cicero 50, Illinois  
Largest Independent and Exclusive  
Metal Ball Manufacturer



**GEAR  
RACKS?  
YES!**

**LARGE... SMALL...  
STRAIGHT...HELICAL  
ANY SIZE...ANY TYPE  
ANY MATERIAL**



*Gears for Every Purpose ... one gear or 10,000 or more*

**ILLINOIS GEAR & MACHINE COMPANY**

2108 N. NATCHEZ AVE. • CHICAGO 35, ILLINOIS



**SPECIAL METHODS PRODUCE  
SMALL QUANTITIES AT  
MINIMUM COST.**

When you need just a few pieces — when you're still in the experimental stage — then an economical, cooperative source of parts is important.

Our Machine-Cut Method avoids custom die costs completely by use of special machinery which skillfully fashions pilot quantities.

Careful calculation determines the point at which labor costs warrant our Short Run Method, which uses simple contour dies and special purpose presses.

Best of all, when you get into large quantities on the experimental part, our STAMPINGS DIVISION is still your most economical producer, using our Production Method. Thus all three methods are at your disposal. And impartial choice of method saves money for you!

Send for Informative Literature

**STAMPINGS  
DIVISION**



2401 Union Street, Glenbrook, Conn.

## Limited Production Under Way At Link-Belt Colmar Plant

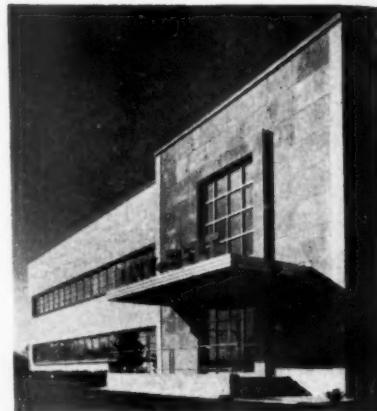
Limited production of custom-designed conveying and processing machinery has begun in the new 300,000 sq. ft. plant of the Link-Belt Company in Colmar, Pa.

Although full-scale operation is still some time in the future, the large engineering department, which occupies the entire second floor of the two-story office building, is already in full operation. Industrialists, civic leaders and members of the press inspected the plant at various programs during the early part of last month.

Typical of the work they viewed already under way, was the early production stages on elements for a Venezuelan iron ore handling system that will unload, crush, screen and store the ore at a rate of 6,000 tons per hour—100 tons a minute.

The Colmar plant is of modern design, with large, uncrowded work areas. It combines straight-line production with utmost flexibility. Changes in layout can be made to suit a wide variety of products.

The plant is 880 feet long, 300 feet wide, with a two-story office building.



Entrance to new Link-Belt plant

Craneways in four of five 60 ft. production bays, with 32 ft. clearances below trusses, extend under still higher transverse craneways in the receiving and shipping cross bays at either end.



Manufacturing operations have been put on a straight-line production basis in the new 300,000 sq. ft. plant

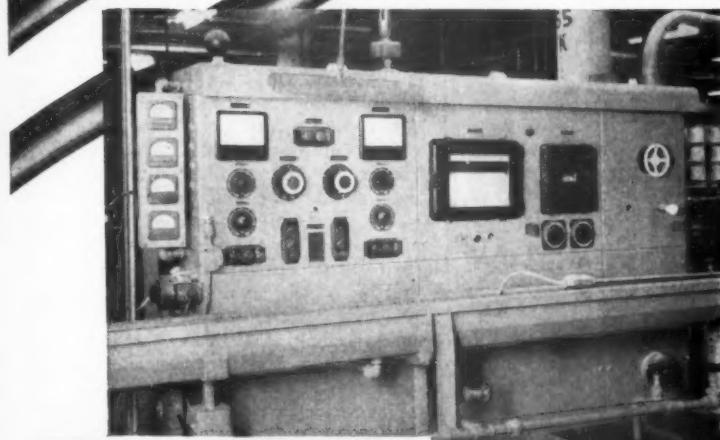
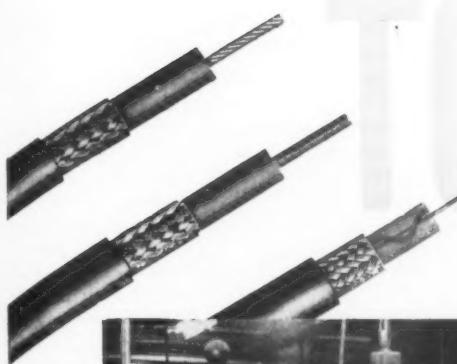
### NEW FILAMENT IN POWER TUBES MAKES FOR BIG SAVINGS

Important cost savings, increased efficiency, and longer life have been achieved in high-power vacuum tubes in industrial electronic equipment, communications and other equipment, through the use of thoriated-tungsten filaments, long considered impractical for this application, according to R. B. Ayer, tube engineer of the Radio Corporation of America. Mr. Ayer described the RCA Tube Department's successful efforts to establish the practicability and advantages of thoriated-tungsten filaments in high-power vacuum tubes, at the winter meeting of the American Institute of Electrical Engineers.

In performance, thoriated-tungsten

tubes have established marked advantages, it was pointed out. Thoriated-tungsten's electron-emission efficiency is 10 to 15 times greater than that of pure tungsten, yet its operating temperature is 500 to 600 degrees lower. The lower operating temperature results in substantially less heat stress on glass and metal parts. This, in turn, makes possible a simplification of mechanical problems and the use of less complicated tube-cooling systems.

Thoriated-tungsten filaments have been used in low-power tubes for many years. It was generally accepted that thoriated-tungsten was not usable in high-power tubes. Today thoriated-tungsten tubes have been operating continuously for thousands of hours at plate voltages up to 17,000 volts.



Control panel for maintaining plastic materials at precise temperature and viscosity.

Federal's "Precision Production" is assured by this electronic panel board which controls diameter and speed of cables during extrusion.

## in transmission line for HF·VHF·UHF

# *Federal's* highest-quality **RG TYPE CABLES**

including the Federal-developed low-temperature, non-contaminating thermoplastic jacket

**DESIGNED FOR:** H-F communications, television, industrial electronics, radio and TV lead-ins, aviation, test equipment, radar, pulse and experimental equipment

QUALITY of product is the secret of dependable cable performance and quality is what you get in every inch of Federal RG type coaxials... from jacket to conductor!

Only the finest materials—quality-controlled throughout the entire manufacturing process—are used in Federal cables. Every possible test is made to insure constant efficiency of physical and electrical properties under the most rugged conditions encountered by general and military applications.

Whatever your transmission line requirement—specify Federal RG types. You'll always be sure you've made the right choice!

**COMPLETE COAXIAL CABLE ASSEMBLIES** also are available from Federal to meet your requirements. This service offers the same "Precision Production" that made "Federal" the outstanding name in coaxial cables.

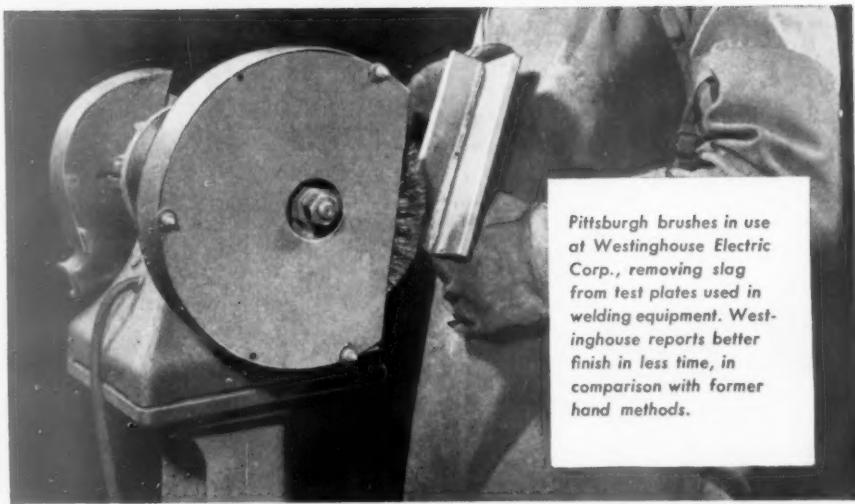
*Manufacturer of America's most complete line of solid dielectric cables*

*Federal*  
FEDERAL  
TELEPHONE & RADIO

**Telephone and Radio Corporation**

SELENIUM-INTELIN DIVISION 100 KINGSLAND ROAD, CLIFTON, NEW JERSEY

In Canada: Federal Electric Manufacturing Company, Ltd., Montreal, P. Q.  
Export Distributors: International Standard Electric Corp., 67 Broad St., N. Y.



Pittsburgh brushes in use at Westinghouse Electric Corp., removing slag from test plates used in welding equipment. Westinghouse reports better finish in less time, in comparison with former hand methods.

## Replace hand finishing with power-driven Pittsburgh Brushes for Better Cleaning Lower Labor Costs Fewer Rejects

—as these companies did:

**Removal of imbedded slag** in welding test plates formerly was done by hand at the Westinghouse Electric Corp., Trafford, Pa., using a wire brush and welder's hammer. Pittsburgh brushes, powered by a  $\frac{1}{2}$  h.p. motor, now remove more slag in less time, and produce a better finish. In addition, Westinghouse reports their Pittsburgh brushes "stand up better than average in use."

**Complete cleaning of dried concrete,** rust and scale from steel frames used in concrete forming is essential prior to reusing the forms. Pittsburgh wire brushes were installed at the Universal Form

Clamp Co., Chicago. Working on a conveyor-fed machine, the brushes now remove all foreign material at a rate of 50 pieces per hour, replacing former laborious hand brushing and scraping.

**De-scaling preheated bar stock** at the Dominion Forge & Stamping Co., Ltd., Canada, was formerly done by hand scraping. This never did a complete job, and inclusions resulted which produced defective forgings. Pittsburgh brushes, on specially-designed machines, now do the job, and have "increased efficiency, decreased the amount of scrap, improved work quality, and saved labor."

### WRITE TODAY FOR FREE BOOKLET!

Write for a free copy of our booklet that shows, through actual case histories, how Pittsburgh cuts brushing costs. Address: PITTSBURGH PLATE GLASS COMPANY, Brush Div., Dept. W-2, 3221 Frederick Ave., Baltimore 29, Maryland.



**PITTSBURGH**

**Power Driver**

**BRUSHES**

BRUSHES • PAINTS • GLASS • CHEMICALS • PLASTICS • FIBER GLASS

**PITTSBURGH PLATE GLASS COMPANY**

### TWO NEW LATICES ANNOUNCED BY GOODYEAR

Production of two new latices of special interest to paper and textile converters and other chemical processors is announced by Goodyear Tire & Rubber Company's chemical division, Akron, Ohio.

The new products are designated as Chemigum Latex 235BHS and Chemigum Latex 245CHS, states C. O. McNeer, chemical division sales manager. The new 235BHS adds a high solids, minimum stabilized latex to the 235 series of butadiene-acrylonitrile copolymers. The new 245CHS adds a high solids, anionic stabilized copolymer to the 245 series.

According to R. E. Workman, in charge of the chemical division's commercial development, requirements of paper and textile converters can now be met with a Chemigum latex tailored for their particular needs because of availability of three different stabilization systems, ammonia soap, synthetic anionic, and minimum stabilization in both medium and high acrylonitrile content latices.

Favorable reception of the anionic stabilized high acrylonitrile latex 235CHS by those interested in a high acid salt tolerance was responsible for introduction of 245CHS to expand sales in this field with a medium nitrile-content latex, McNeer said.

Butadiene-acrylonitrile latices are used in the compounding of adhesives, plasticization and modification of vinyl, rubber and resinous latices, modification of asphalt emulsions, and formulation of specialty coatings as well as for coating and impregnating paper, fabric and leather.

✓ ✓ ✓

### DOMESTIC GRAPHITES SUITABLE FOR NONFERROUS CRUCIBLES

A recent investigation by the National Bureau of Standards indicates that, for making the crucibles used in nonferrous foundries, domestic graphites from Alabama and Pennsylvania are fully as good as the traditional imported Madagascar graphite. Furthermore, it appears from the NBS study that small-flake graphite can be used instead of the generally preferred large-flake graphite without impairing the service life of "carbon-bonded" graphite crucibles. The NBS work also indicates that the carbon-bonded type of crucible has about twice the average service life of the "clay-bonded" type. The study was conducted by R. A. Heindl of the NBS refractories laboratory in cooperation with certain crucible manufacturers and nonferrous foundries.

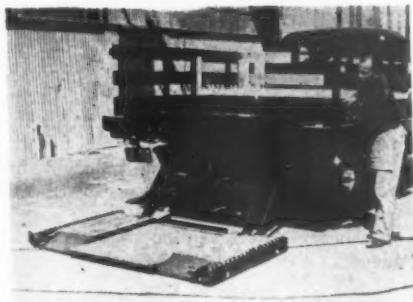
Graphite crucibles are used by several hundred nonferrous metal foundries throughout the United States to melt metal for casting parts indispensable for both civilian and military purposes. These crucibles are made from graphite flakes, bonded either with clay or with

(Please turn to page 161)

(Continued from page 158)

organic binders such as tar or pitch; the latter type is known as carbon-bonded. Graphite is similarly used in the manufacture of ladle stopper heads required by the steel industry. Until now, large-flake graphite imported from Madagascar has been used for these purposes almost to the exclusion of other graphites. Because of the strategic importance of crucible graphites, now being stockpiled, the Army-Navy Munitions Board suggested that the National Bureau of Standards undertake the present study. As a result of the NBS findings, a Pennsylvania graphite mine is being reactivated so as to insure the availability of domestic graphite if the supply of lower-cost Madagascar graphite should be cut off.

TAIL GATE EQUIPPED  
WITH ROLLER ASSEMBLIES



The accompanying illustration shows truck tail gate with specially designed roller assemblies being used by Consolidated Vultee Aircraft Corp., San Diego, Calif., to transfer heavy, yet delicate armament equipment from cribs to airplane which have just come off the assembly line. The roller assembly on flatbed trucks has been designed so that the pallets can easily be lifted by hydraulic power and rolled from the lift gate onto the truck bed. According to Consolidated Vultee plant engineers, the special Gar Wood elevating end gates have made it possible to expedite the transfer of armament assemblies and to perform the work more safely.

ELECTROLYTIC MANGANESE PROVES  
SATISFACTORY IN TOOL ALLOYS

Electrolytic manganese from low-grade domestic ores can be substituted satisfactorily for some uses of ferromanganese made from high-grade foreign ores, according to a report released by the Bureau of Mines after extensive tests conducted in cooperation with industry.

For some purposes electrolytic manganese is superior to other grades because of its high purity, the report says.

In the tests 46 producers substituted electrolytic manganese produced at the Bureau's experiment station at Boulder City, Nev., for their customary grades of manganese in the production of ferrous

(Please turn to page 162)

- ✓ check the price
- ✓ check the analysis
- ✓ check the performance

and you'll specify  
**MUELLER BRASS CO.**

**tuf-stuf®**  
**aluminum bronze**

**check the price**—TUF-STUF, the Mueller Brass Co. series of aluminum bronze alloys, can be supplied at prices below those of similar alloys. Whether you buy TUF-STUF in rod shapes, forgings or screw machine products you'll save money because these alloys are priced right, machine better and last longer.

**check the analysis**—TUF-STUF alloys are a high copper base series containing from 9% to 13% aluminum and varying amounts of iron, nickel and manganese. They do not contain zinc and, therefore, are not subject to dezincification. TUF-STUF alloys are available in several grades with a chemical composition, suitable hardness and mechanical properties for many different applications.

**check the performance**—TUF-STUF alloys are light and strong—about 8% lighter than cast bronze and almost as strong as steel. They have a low coefficient of friction as well as good bearing and mechanical properties. They not only retain these properties but resist oxidation at the high speeds and high temperatures of modern production equipment. They will withstand strong acid attack or the effects of brackish waters and are highly resistant to corrosion.

These alloys can be hot-forged into relatively intricate shapes... need little or no machining... and the smooth, bright surfaces eliminate costly finishing.

**MUELLER BRASS CO.**  
**PORT HURON 21, MICHIGAN**

For complete information, write today for our new TUF-STUF Engineering Manual.





- WIDE RANGE OF PATTERNS
- SKILLED WORKMANSHIP
- DEPENDABLE ACCURACY

HERE IS A BACKLOG of perforating skill and experience that's been growing for over 68 years. MATERIALS? Any available metal can be perforated—or the non-metals, such as Plastics, Plywood, Rubber and Fabrikoids—practically any sheet, plate or coil material. PERFORATIONS? A selection without limit, from holes .020" in diameter up to 9" (slots from .006" wide). And from tissue paper or foil thicknesses, you can go up to 1" steel . . . such are the possibilities at H & K. Your problems—large or small—are readily solved at "Perforating Headquarters." Write for complete information.

ALSO REMEMBER—H & K Standardized Guard Parts for the safe enclosure of gears, motors, belts and other dangerous moving parts.

The Harrington & King Co.

5678 FILLMORE ST., CHICAGO 44, ILL.  
114 LIBERTY ST., NEW YORK 6, N. Y.



Coniflex\* type bevel gear, used in lift truck

Spur  
Helical  
Worm  
Herringbone  
Internal  
\*Coniflex Bevel  
Spiral Bevel  
Spline Shaft

Ever know a customer of The Cincinnati Gear Company who was anything but satisfied? That's because we stand behind our products. If there was ever an order not right—we made it right. And that's why customers everywhere have confidence in us. We would like to work with you too. If you have a gear problem, talk to us about it. Since 1907 we have been delivering quality gears made by expert craftsmen. So wire, write or call.

\*Reg. U. S. Pat. Off.



## THE CINCINNATI GEAR COMPANY

"Gears . . . Good Gears Only"

Wooster Pike and Mariemont Ave. • Cincinnati 27, Ohio

(Continued from page 161)  
and nonferrous metals and alloys and of welding rod coatings.

### Cost Factor Cited

Prepared by Frederick Sillers, Jr., Bureau metallurgist, the report says that the only serious objection that can be raised against electrolytic manganese is cost.

The Bureau's tests show that electrolytic manganese is highly desirable for stainless steels and welding rods because of its virtual freedom from phosphorus and carbon.

The Bureau report says that the tests proved that electrolytic manganese is satisfactory in the manufacture of alloy saw, chisel, and die steels by the basic electric process.

Manganese recoveries in this case averaged 100 percent. Recoveries of 100 percent are also obtained in low-alloy steels.

### Other Successful Use

Electrolytic manganese was used successfully, also, in Hadfield manganese steel, and in acid electric furnace manufacture of steel casings. Manganese recoveries for the electrolytic and ferro alloy are equivalent, when care is taken to add the electrolytic manganese chips properly.

The tests proved beyond question that electrolytic manganese can be added with equal or superior results to basic open-hearth steel if the manganese is added in the ladle.

### Recoveries Erratic

In the case of ingot iron and extremely low-carbon steels, manganese recoveries are erratic owing to the high degree of oxidation in the melt. With this exception, recoveries of electrolytic manganese are at least equivalent to those of ferro-manganese.

A free copy of Report of Investigations 4861, "Electrolytic Manganese Tests in Cooperation with Industry," may be obtained from the Bureau of Mines, Publications Distribution Section, 4800 Forbes Street, Pittsburgh 13, Pa.



## MILITARY USES MILLIONS OF PLASTIC BUTTONS

Plastic buttons are extensively used in the military field. These buttons are manufactured according to Federal Specification V-8-871A. The typical Army khaki shirt, one of the largest items procured during the year 1952, totalled 6,697,700 shirts. As plastic buttons were specified and as each shirt has an average of ten buttons, this makes an impressive 66,977,000 plastic buttons used on this particular type of shirt.

Specifying that its regular khaki trousers should require six buttons, the Army procured 44,548,110 pairs of trousers during the same period, for a total of approximately 26,000,000 buttons.

The Army's herringbone twill jacket, which formerly called for either metal or plastic buttons, is now being procured with plastic buttons only. At eight buttons per jacket this adds up to more than 11,000,000 buttons for the last several procurements of this item.

# Announce Radically New Construction Material

**Lightweight aggregate makes concrete mixes more fluid. Concrete mortar and plaster made with new material are strong and light. Concrete can be pumped through rubber hose.**

A radically new construction material with many potential applications in the building trades was recently announced by a ceramics expert at Armour Research Foundation of Illinois Institute of Technology, Chicago.

The material consists of tiny glass balloons, about the size of grains of sand, according to John Neff, assistant chairman of the ceramics and minerals research department at the Foundation. Achievement of successful methods for manufacturing the material represents four years of laboratory effort.

Trade-named "Kanamite" by Kanium Corporation, Chicago, which sponsored the development work at the Foundation, the material is a fine-grain lightweight aggregate made by blowing up individual grains of clay in a special furnace.

Concrete mixes using the new material in place of sand or other aggregates are very fluid, even though water content is low, Neff said. This fluidity means that—for the first time in building history—contractors can fill forms with concrete pumped through rubber hoses. Construction costs can be lowered because of the virtual replacement of shovels and awkward metal hose now used.

"Concrete, mortar, and plaster made with the material have proved to be strong and light. They also have good insulating qualities," Neff said.

The inherent strength of the material has been demonstrated by making plaster specimens with it that show a compressive strength greater than that of specimens made with sand. The high

strength of plaster made with the new aggregate will allow thinner coatings of plaster to be used on walls than are now possible. Being strong as well as light, the relatively thin layer of the plaster is able to support its own weight.

"Plaster board, too," Neff said, "can be made thinner and lighter while retaining adequate strength."

Individual particles of the new material are almost spherical. Their size varies with the raw material used and the method of processing. Sizes from .0116 inch to .0069 in diameter seem to be the most useful.

"Novel in concept, unique in process, and certainly unusual in performance, this altogether new aggregate is not to be confused with the bloated or expanded aggregates now so widely used in concrete construction work," Neff declared. "Particle size alone completely divorces lightweight concrete aggregates, which range upward from a diameter of perhaps 3/16 inch, from these particles which range downward from this level to as small as .0024 inch in diameter or even smaller."

The material has potential applications in addition to the concrete, mortar, and plaster mixes already mentioned, Neff said. As an ingredient of baked clay products it should make possible lightweight refractories and high-temperature insulating materials. It has almost unlimited possibilities, he declared, as a filler in plastics and road-building materials.

## NEW INSTRUMENT DETECTS MILLIONTH-INCH SCRATCHES

General Motors Research Laboratories have developed an instrument which can detect scratches as small as one millionth of an inch. Called the Surfagage, it was recently demonstrated before the American Society of Tool Engineers.

The new precision device, designed to aid manufacture of both defense and civilian products, can be used in machine shops and factories to insure accuracy of highly finished surfaces of machined parts. To make the device available to all industry, GM Research has licensed its manufacture to an instrument-making firm.

Although it is sensitive to surface variations as small as a millionth part of an inch, the Surfagage is a simple, rugged, portable instrument that can be plugged into an electrical outlet anywhere in a shop or factory. It records the degree of surface roughness of a machined part, such as an automotive piston, gear tooth, transmission clutch facing, crankshaft,

cylinder lining or any other part with a machined, ground, honed or lapped surface.

In engineering practice the surface "roughness" of precision parts, virtually invisible to the eye and sometimes absolutely smooth to human touch, must be controlled. Controlling the mating surfaces is important both for wear characteristics and proper lubrication of machined parts wherever rubbing contacts occur.

Thus, engineers have established a series of so-called roughness values for surface finishes which are specified on blueprints and drawings. In effect, the Surfagage monitors these values. It works this way:

If a shop man wants to determine whether his machine tool is producing a surface of a specified roughness value on a certain part, he merely moves a pickup with a diamond stylus over the surface of the part. The stylus is fitted to the electronic pickup in a case about the size of the cap of an average fountain pen.

(Please turn to page 170)

# P&H

## Arc Welders and Electrodes

**put welding in your plant on a low-cost, high-production basis**

**P&H DC RECTIFIER WELDER**

Has Dial-lectric Control for instantaneous heat selection at the work. Three sizes, 200, 300, and 500 amps., NEMA rated.



**P&H WELDING TWINS**



**P&H AC WELDER**

Has P&H Dial-lectric Instantaneous Remote Control. Sizes up to 625 amps., NEMA rated. Connectable to 220 and 440 volts.



**P&H WN-301 Engine-Driven DC ARC WELDER**  
Portable. Equipped with Dial-lectric Control. Runs at only 1750 rpm. Welding service range, 60-375 amps., NEMA rated.



**LOW-HYDROGEN ELECTRODES**

13 types that take the problem out of welding high-sulfur, free-machining, low-alloy, and high-strength steels; castings, etc.

Ask your P&H representative or distributor for complete information, or write for free bulletins.

**P&H WELDING DIVISION**

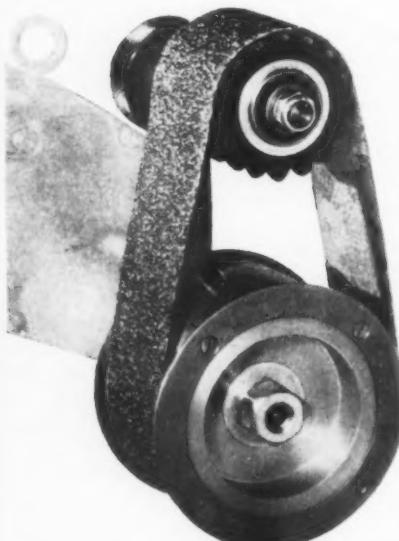
**HARNISCHFEGER CORPORATION**

4577 W. National Ave., Milwaukee 46, Wis.

**2  
pages of  
HELPFUL  
COST  
CUTTING  
IDEAS  
for YOU**



"**GREEN-GRIT**" silicon carbide wheels in vitrified bond put keen edges and fine finishes on carbide tipped tools—to close tolerances. Recommended gradings for offhand and surface grinding, wet or dry: rough, GC60-H11-VR; finish, GC100-G5-VR.



**NEW "PORT-A-BELT"** Grinding Attachment quickly converts any horizontal portable grinder to a belt grinder. It's light—compact—easy to attach. It's a natural for any metalworking shop concerned with die and mold grinding, weld cleanups, edge breaking, contour finishing. Often eliminates 2 or 3 operations.



**NEW RESILIENT FEED WHEELS** prove ideal in centerless grinding of armatures and other work requiring light but even pressures. Wheels are standard A 80-R2-R grading, with specially designed resilient rubber center. They'll save money for every centerless user.



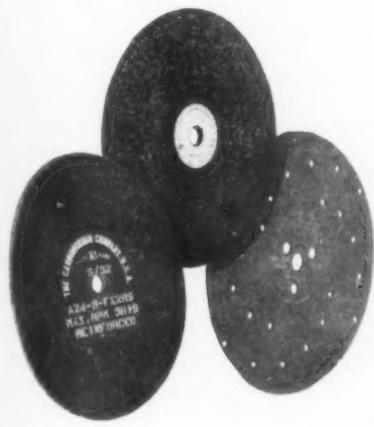
**NEW R3 (Rubber) BOND RACEWAY WHEEL** lowers costs in the bearings industry. It cuts cool, holds form—reduces regrinds and rejects. One wheel often replaces tandem mountings. You'll get far more output per wheel, too.

**...from CARBO**  
TRADE

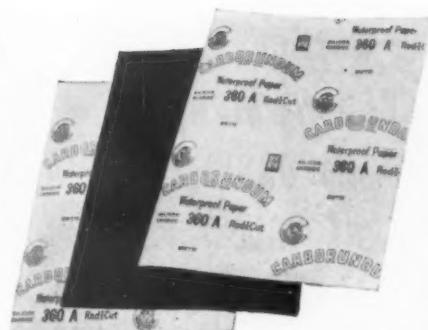
"Carborundum", "Aloxite", "Green-Grit", "Red-I-Cut", "Fastcut", "Port-A-Belt", and "MX" are trademarks of The Carborundum Company, Niagara Falls, New York



"**FASTCUT**" Pad 85 Assembly now permits wet sanding with discs, a brand new finishing method that gives better finishes in far less time. Complements the "**FASTCUT**" Pad 87 Assembly for dry disc sanding—another cost-cutter for you!



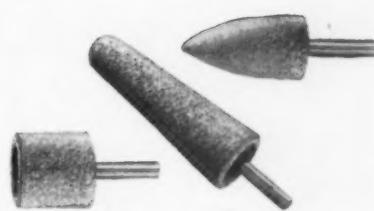
Abrasive **CUTTING OFF WHEELS**—from 12 to 20 times faster than steel saws—produce smoother cuts at lower cost than other, conventional, methods. Rubber bond for wet cut-off, resinoid bond for dry, "MX" for free hand... CARBORUNDUM makes the right wheel for any metallic or non-metallic cut-off job.



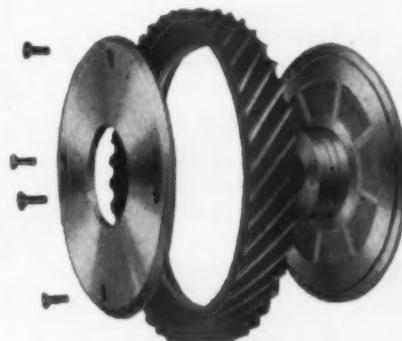
**"RED-I-CUT"** Waterproof Paper has revolutionized wet sanding operations in thousands of shops. With its new flexible backing and a new resin bond, you can confidently expect it to deliver a faster cut, a better finish, and up to 50% longer useful life on production runs.



**RUBBER BUSHED WHEELS**, used with rubber washers, are being widely adopted because they reduce vibration to a minimum in portable grinding. Results: less operator fatigue, greater output and longer wheel life. Every user of portable equipment should investigate these cost-cutting wheels.



**V1 BOND**, outstanding performer in internal grinding, is now saving money for users of mounted wheels and points. Why? They last longer, cut faster, hold form better, because V1 Bond is stronger, free-cutting. And for quality of finish obtained, they're unsurpassed.



**"T-61" UNIVERSAL HUB CONTACT WHEEL ASSEMBLY** now combines economy of longer belt life, achieved by serrated wheel surface, with equally sharp saving in wheel replacement cost. Changeable "tire" idea multiplies wheel versatility too. Hundreds of abrasive belt users are enthusiastic about results.

## You profit when you STANDARDIZE on Abrasives by **CARBORUNDUM**

When you do business with the only supplier of all the types of abrasives there are, certain unique advantages are yours to enjoy:

**FIRST**, a control of abrasive quality which is constant, identical, and dependable—no matter what abrasive method you use.

**SECOND**, a technical advisory service which brings to your attention every new development in the entire field of abrasives.

**THIRD**, a refreshing approach to your abrasive problems which only a complete-line source, assuming complete-line responsibility, can offer. Recommendations from CARBORUNDUM are free from bias, completely objective... thus entirely dependable.

For further information on any of the ideas shown here, call your CARBORUNDUM salesman or distributor, write Dept. P 80-31.

# RUNDUM

...the ONLY source for EVERY abrasive product you need



WHEN WE WANT THE  
IMPOSSIBLE  
WE CALL THE  
**FLYING TIGERS**



**LINCOLN MERCURY DIVISION** of Ford Motor Co.

says C. J. Isett, Division Traffic Mgr.

LOS ANGELES WANTS THOSE BODY PARTS  
ON THEIR ASSEMBLY LINE TOMORROW  
— THAT'S IMPOSSIBLE!

NO PROBLEM, KAY—WE'LL  
SHIP BY FLYING TIGERS  
TONIGHT — THEY'RE AS FAST  
AND SAFE AS  
OUR NEW  
MERCURY.

AS USUAL MR. ISETT WANTS THAT  
CARGO IN L. A. BY "YESTERDAY."  
CAN DO?

CAN DO,  
SUGAR.

LINCOLN-MERC'S SHIPPING A LOT  
OF PARTS TO L.A. LATELY.

HAVEN'T YOU SEEN THE NEW 53'S?  
THEY'RE ROLLING OFF THE LINE  
OUT THERE LIKE CRAZY!

THAT OVERNIGHT  
FLYING TIGER SERVICE IS  
TERRIFIC—SURE HAS HELPED  
US KEEP UP WITH SALES.



Write for "THE AIR FREIGHT WAY TO  
LOWER COSTS AND BETTER SERVICE"

FLYING TIGERS...ANOTHER BUSINESS BUILT ON 'CAN DO'

**The Flying Tiger Line Inc.**

OFFICES IN PRINCIPAL CITIES • GENERAL OFFICES: LOCKHEED AIR TERMINAL, BURBANK 8, CALIFORNIA • CABLE: FLYTIGER

(Continued from page 167)

The Surfagage has a high sensitivity transducer, a device that transforms motion into electrical voltage. When the diamond stylus moves over the "peaks and valleys" of a machined surface, the microscopic up-and-down motion is transformed into electrical signals which are recorded on a meter dial.

By glancing at the reading on the meter, the shop man can tell instantly whether the roughness value checks with the specification of the part he is machining.

Irregularities on precision parts in production are measured in microinches, or millionths of an inch. Such scratches are so small that if a pocket mirror with a roughness of one microinch was enlarged until it was ten miles wide, height of the irregularities on its surface would be less than one inch.

◆ ◆ ◆  
**DEVELOPMENTS IN  
HIGH-FREQUENCY HEATING**

Much of the progress registered in induction and dielectric heating is in adapting the process to the treating of particular products. Mostly the problems center around the creation of suitable electrodes or work coils and work-handling equipment.

Radio frequencies are taking over soldering operations. One equipment has been devised to permit the induction soldering of the many fittings on gasoline tanks for trucks. An operator successively moves a tank from one station to another, where each of the several fittings are soldered automatically. All stations are interlocked so that each takes its proper turn without attention by the operator and giving a nearly 100 per cent duty cycle on the 10-kw r-f generator.

Each soldering operation is performed in from 4 to 11 seconds, which is but a small fraction of the time if done by hand. Less solder is used, and more consistent joints result.

The Electrogluer, devised by Westinghouse electronics engineers and the Earle-Hart Company, builders of wood-gluing machinery, is versatile in that it can do three kinds of wood-gluing operations normally requiring separate machines. It can glue the edges of boards together, it can apply veneer to core stock, and it can apply edge-decoration trim to panels. Thus the machine, with only minor changes in settings can operate either on the principle of edge gluing or on that of the so-called stray field heating. A single operator can run the machine, loading one side of a platform while the other side carries a part being glued. Rotating the table swings the finished piece out and the next one to be glued in.

Essential to the success of the Electrogluer is a new radio-frequency generator that can produce either of two frequencies—6.8 or 13.6 megacycles, by a simple change of a few connections. This is the first time this has been suc-

(Please turn to page 172)

Aging characteristics of RoZone compounds, highly important to the life of the cable, are constantly checked by means of oxygen "bomb" and long-time heat tests.

5-conductor control cable RoZone insulated, Neoprene sheathed, outer sheath of RoPrene (Neoprene)—600 volts.



#### ***It Costs Less to Buy the Best***

RoZone is approved and accepted by leading utilities, industrials and consulting engineers.

# **Rome RoZone®**

## **Superior Ozone-Resistant Insulation Deserves Your CONFIDENCE**

### **What its Excellent Aging Characteristics Mean to You**

**Q:** Why have oil base compounds been recognized as superior for over half a century?

**A:** Partly because of excellent moisture and ozone resistance, but particularly because of their resistance to natural aging effects. Such cables are still operating satisfactorily today.

**Q:** How do we know that RoZone oil base compound has superior aging characteristics?

**A:** First, because it exceeds industry specification requirements. Second, because this type formulation has been time proved for over fifty years.

**Q:** Are the applications of RoZone limited by its aging qualities?

**A:** No. RoZone insulated cable can be used in practically any application because of its excellent aging properties. It is successfully installed direct in earth, in conduit, in racks, overhead and in combination runs.

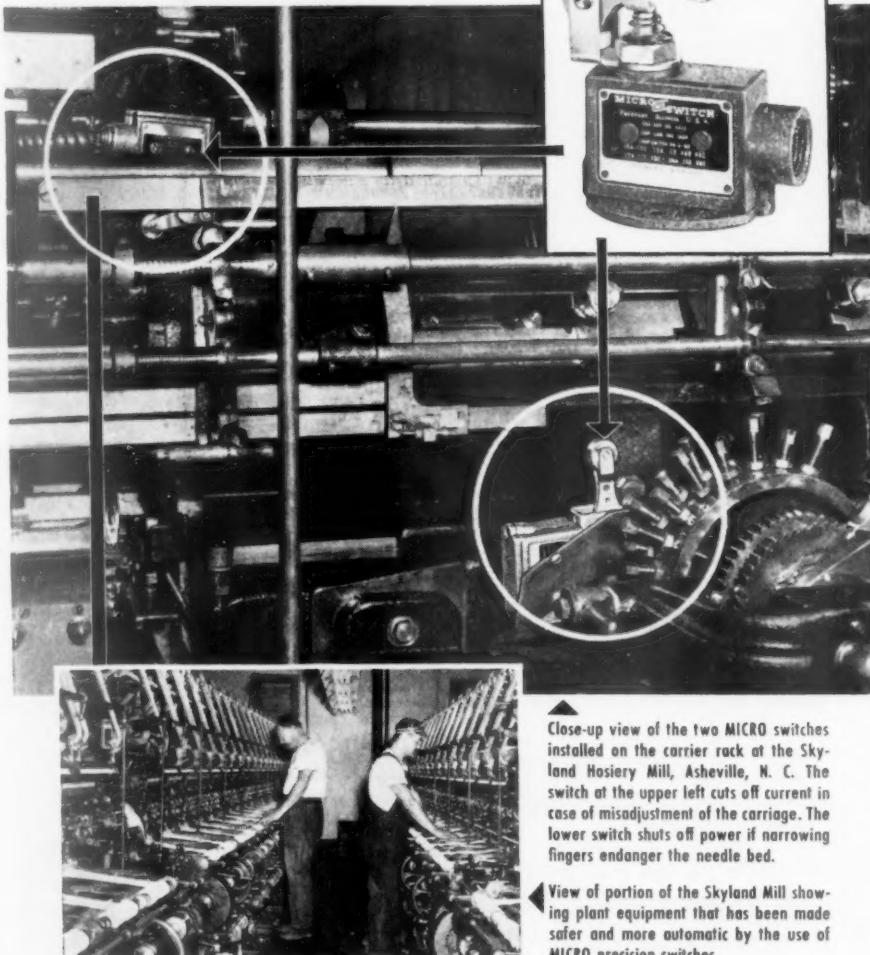
In any installation where exceptional resistance to aging, corona and ozone cutting plus low dielectric loss and excellent electrical stability in water are required, Rome RoZone deserves your confidence.

**ROME CABLE**  
*Corporation*  
ROME • NEW YORK  
and  
TORRANCE • CALIFORNIA



# "Since installing these two MICRO switches we have had no record of needle breakage"

Says L. H. Prinz, Plant Engineer,  
Skyland Hosiery Mill, Asheville, N. C.



Close-up view of the two MICRO switches installed on the carrier rack at the Skyland Hosiery Mill, Asheville, N. C. The switch at the upper left cuts off current in case of misadjustment of the carriage. The lower switch shuts off power if narrowing fingers endanger the needle bed.

View of portion of the Skyland Mill showing plant equipment that has been made safer and more automatic by the use of MICRO precision switches.

Not only have these MICRO switches prevented needle breakage but, according to Mr. Prinz, they have also reduced the danger of jams on the carrier rack that can cost from \$500 to \$2000 to repair.

Skyland's engineer installed one switch on the carrier rack in such a way that it stops the machinery at once in the event of any misadjustment or mechanical failure on the part of the carriage. The other switch acts to stop the machinery if the narrowing fingers approach each other so closely as to tear up the needle bed.

Plant engineers in every industry are daily finding more and more uses for MICRO switches as limits, safeties and interlocks to make existing equipment more automatic and more productive. There is a MICRO authorized distributor located near you with a wide variety of MICRO precision switches from which to select the switches best suited to your equipment needs. Micro engineering service is also available at nearby branch offices to help you solve your switch problems.

**MICRO**  
MAKERS OF PRECISION SWITCHES

FREIGHTON, ILLINOIS

A DIVISION OF  
MINNEAPOLIS-HONEYWELL REGULATOR COMPANY



(Continued from page 170)  
cessfully accomplished on commercial dielectric-heating equipments. To obtain the higher frequency, it requires means for short-circuiting a portion of the plate choke, removal of some of the capacitors, and greatly reducing the amount of inductance of the tank circuit.



Work handling is the stand-out feature of the induction-heating field, which makes such applications ideal from a production standpoint. One representative equipment is one for hardening a tiny and difficult-to-heat part of a rocker arm for a new automobile engine. The part to be heated is the spherical shaped area no larger than 3/16 inch in diameter located inside a recess in one end of the rocker arm where it is repeatedly struck by the push rod. It is necessary to confine the heat to this area, otherwise the bore of the rocker arm will also be hardened and make subsequent honing difficult.

The machine created to solve this problem consists of a traveling metal belt holding pins that support the rocker arms in a precise manner. The operator needs only to load the machine. The parts are carried automatically through the heating zone, where special hairpin type of work coils do the heating on a time basis, followed by quenching and delivery to a conveyor or tote box. The machine is made self-protecting in case the belt jams or any rocker arm is incorrectly positioned. Whenever the machine is manually stopped, except in emergencies, the indexing continues until all parts heated have been quenched. Thus no parts in process are spoiled.

## EXPERIMENT WITH COAL PIPE LINES

Report from Great Britain says that British scientists are developing plans to pump coal from mines to destination through overland water pipelines, the statement being that lumps of coal "as large as coconuts" can be pumped long distances, cutting transport costs in half. If experimental pipe line proves successful, it is the plan to build a hundred-mile pipeline from the mines to London, for transporting some 5,000,000 tons of coal to power stations. In this country, the Hanna Coal Company of Cleveland has a 3½ mile line under test near Cadiz, Ohio, and the U. S. Bureau of Mines is also studying this method of transporting coal.

# Office Equipment and Supplies section of **PURCHASING Magazine**

JANUARY, 1953



Office of President Algot J. E. Larson, Art Metal Construction Co., in company's new home office building at Jamestown, N.Y.

## Printing Job-Order Ticket

# The Real Cost of Company Owned Printing Plants

By John Paine

State Mutual Life Insurance Co.  
Worcester, Mass.

Address at Joint Meeting of Insurance Company Buyers and  
Insurance, Banking and General Office Buyers Group of the NAPA,  
at Boston.

THE word "cost" cannot be defined unconditionally. Cost becomes an individual formula in each business enterprise. Cost to some means the actual money outlay, past and present, for the cost of production. To others, cost includes not only the cost of production, but in addition, the marketing and administrative expenses combined to represent an overall or commercial cost.

At State Mutual we include in the cost of printing by our own plant: (1) Direct Labor Cost; (2) Direct Material Cost; (3) Machine Usage; (4) Department Overhead.

For recording expenses, the entire company is divided into departments. A method of account codes has been established which permits the charging of all direct expense to the department incurring the expense. Our accounts closely follow the classifications required by the Convention Blank but frequently are more detailed. Since we own our Home Office Building, our "rent" charge is a composite of all expenses necessary to the operation and maintenance of the building. Our rent is allocated to departments on the basis of square footage occupied, with no consideration given to possible relative rental values of areas.

For bookkeeping purposes we maintain a so-called "Stock" account into which are charged, by class of expense, supply, printing and stationery items which are used generally by all departments. Requisitions from departments for "Stock" items are priced, extended, totalled, and used as the basis for bookkeeping entries, to transfer expense from "Stock" to the department issuing the requisition.

Our printing equipment is comprised of basically, multigraphs, mimeographs and multiliths. We

have additional equipment for cutting, drilling, folding, collating, and spiral binding.

A Job-Order form or ticket is used for collecting cost information for each printing order. These Job

ADDRESSOGRAPH DEPARTMENT					000
JOB ORDER TICKET					
Description					Form 100 Check Sheet
Quantity Completed 1000 For Stock Order No. 2042					(Specify Department, Stock, or Agency)
Operator: (Name)	Date	Time Started	Time Ended	Elapsed Time	
J. Smith	6/30	10:00	10:40	.40	.90
R. Jones	7/1	10:25	11:05	.40	.90
Proofreading C. White	6/30	10:45	10:50	.05	.10
Proofreading C. Brown	6/30	10:45	10:50	.05	.10
Inspection G. Black	7/2	8:30	8:45	.15	.30
Banding					
Total Labor				1:45	2.30
Machine					
Addressograph					
Collator					
Fluid Duplicator					
Graphotype					
Mimeograph					
Multigraph (Ink Printing)					
Multigraph (Ribbon)					
Multilith		10:30	11:00	.30	.75
Paper Cutter					
Paper Drill					
Typewriter					
Variograph					
Variowriter		10:05	10:35	.30	.10
Total Machine				1:00	.85
Stock and Supplies:					Unit Cos.
Mats:	1	Blue	Yellow		.10 .10
Plates:		Multex	Rubber		
Stock:	1040	Sheets-Size 8 1/2 x 11 Kind Atlantic Wt. 20			1.82/M 1.89
		Envelopes-Size			
Total Stock and Supplies					1.99
Overhead:		1:45	Clerk Hours		.70 1.23
Total Job Cost					4.57
Complete one job order ticket for each order. When order is complete forward to Auditing Dept. Please attach sample of form completed.					Checked by _____ Date _____

Typical Job Order Ticket used at State Mutual to collect cost information for printing orders, with illustrative figures inserted. The "overhead" figure is explained in the text.

is  
ion  
Job

# there's a big difference in "paperwork" costs

For example, Standard's  
**AUTOMATIC LINE FINDER**

"Vertical tabulating" to a new writing  
line at one stroke makes a big  
difference in continuous typing,  
faster forms production.



**Standard Register**  
BUSINESS FORMS  
Paperwork Simplification

Maybe you, too, could produce from 44% to 300% more business records per hour—with the same personnel—with Standard's business forms and paperwork simplification devices.

These devices for simplifying the **writing process** make a big difference in "paperwork" costs. So does the **analysis** and planning behind Standard Register business forms. For Standard's men concern themselves with the system's purpose and the whole **procedure**, to develop better working papers.

And Standard's 40 years of **form design** experience and "know-how" in producing **top quality business forms** save hundreds of needless operations for 93 of America's 100 largest firms, and thousands of others.

See how we can help you. Phone Standard Register in your city. Or write The Standard Register Company, 101 Campbell Street, Dayton 1, Ohio.

(Continued from page 176)

tickets are pre-numbered so that a control can be maintained while jobs are in process. When a printing order is received by the manager of the department, he enters a description of the item, indicates the agency or the department to be charged, or if the item is for general company use and is to be stocked, indicates that the charge should be to "Stock."

All items which are to be stocked are ordered by the Purchasing Department by purchase order. If a purchase order has been issued, the number of the order is entered on the Job ticket.

#### Complete time record

Each person who works on the order enters his name, the date, the time started, and the time finished, for both himself and for any machine used. Machine time is reported for the period for which the machine is in operation. The operator reports the entire time he is tied up on the job regardless of whether he is operating a machine or not. The difference between machine time and operator time on the machine is the set-up and clean-up time required for the job. Personnel who proofread mats, inspect finished forms or band forms, enter starting and ending time. Each individual working on the job enters any special supplies, or paper stock used. The manager enters the cost of any special plates ordered from outside suppliers, and the quantity completed on the job.

When the order is completed the Job Ticket is forwarded to the Cost Section, where rates are applied to time worked by individuals, to machine time, and to stock used. An overhead rate is applied to the total operator hours on the job.

#### Machine rates

The hourly rates determined for individual machines are based on studies of the average operating time of each machine over an extended period of time. We estimate the average useful life of all our machines to be ten years. A machine that cost us \$5000 is estimated to depreciate at the rate of \$500 a year. To this depreciation is added the annual repair cost as determined from studies of past experience.

Assuming that the average annual cost of depreciation, repair and maintenance for Machine A is \$550 a year, and we have found that the

machine will be operated on the average of 1000 hours per year, we will charge 55¢ per hour for every hour the machine operates on a job.

The overhead for the department is considered to include the amounts of supervisory salaries, general materials and supplies, rent, payroll taxes, pension and group insurance benefits, and other items not charged directly into production cost. The total of these items divided by the total number of clerical hours anticipated for a year determines the hourly overhead rate. This is the rate applied to the total clerical hours on each job in determining the overhead cost.

Printing costs for all standard forms are provided our Purchasing Department automatically, and costs on any special items, when requested. A portion of our printing requirements are handled by our own printing plant, but a substantial portion is also placed with commercial firms. Our purchasing department, therefore, must consider State Mutual Cost as compared with outside cost, as one of the factors in determining who gets the work. It is the buyer who has the final responsibility in selecting his sources of supply.

#### Comparing Costs

When comparing the cost of production in our printing plant with the quotation of the commercial printer it is necessary first of all to discount for the profit element included by the commercial firm. Other considerations in the comparison give recognition to the fact that the commercial printer must absorb all of his overhead, that he has a substantial investment in diversified and specialized machines which we do not have, and that the wage he must pay his production employees is much higher. The productive capacity of the commercial firm must be great enough to take care of maximum requirements, whereas we are able to farm out work in excess of any capacity. With all of these cost advantages it is only reasonable to expect that our costs are frequently lower than bids received.

There is, however, the necessity of quality comparisons, ability to meet delivery requirements and consideration of the size of order. The size of an order can change the entire picture in favor of the outside firm. For example, suppose that we normally order a form in

25,000 lots. Suppose also that our use of this form has grown to the point where we could order in 250,000 lots. Commercial printers with high speed presses can almost certainly produce the 250,000 at a lower cost than we can.

#### Careful planning necessary

If there is enough increase in the use of printed matter to enable ordering in large quantities from commercial firms, at a saving over our cost, ultimately we must be faced with finding more work for our present establishment, having increased costs because of reduced production, or expanding our facilities. We then come to the question of projecting costs of expanded facilities and the effect of these additional costs on present costs. Since actual production must carry the cost of idle capacity, careful planning is necessary to avoid pushing the cost of current production above the cost of purchased services.

If money will earn three percent, one could argue that an investment of \$100,000 in printing machinery results in a \$3,000 a year loss of interest income, and therefore annual expenses of the printing plant should include \$3,000 for interest on this investment. Accepted accounting procedure does not recognize such interest as a legitimate expense to be charged through the books. Nevertheless, in comparing your own printing costs with commercial printing costs, savings resulting from the owning of your own plant should at least equal the income which your plant investment in equipment would earn if invested otherwise.

#### New standards being developed

We are currently developing cost standards for printing which we hope can be used by the manager of our printing department in estimating the cost of new jobs which may arise. It appears that our experience will serve as a basis for developing time standards for various operations going into the production of printing, both for personnel and machines. From these standards it should be possible to determine the time required for any size order, and by applying our cost standards, arrive at an estimate of the cost of an order for our purchasing department to use in determining the placement of orders for new items.

At present we determine the cost  
(Please turn to page 180)

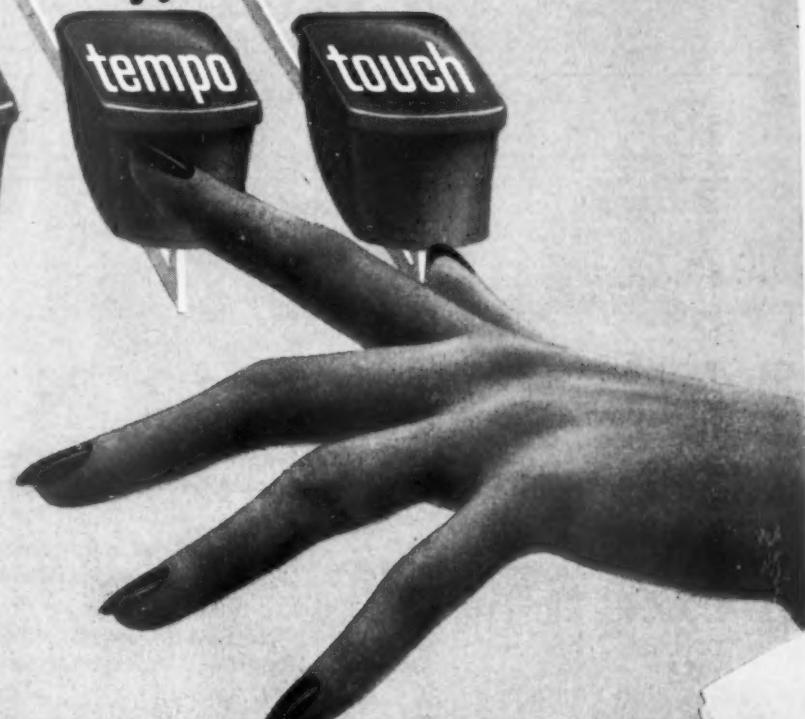
*She's got rhythm*

tested

tempo

touch

s k r c a ; n p



...on her New Remington *Super-riter*



TESTED TEMPO TOUCH is a truly remarkable innovation in typebar action and key design. It makes manual typing faster, easier, and *truly rhythmic*. And that isn't all. The new *Super-riter* also features:

- *Perfect Positioning Scale*—Exclusive feature combined with new simplified margin controls assures perfectly centered letters and headings.
- *Expanded Capacity Keyboard*—to provide 2 additional keys (4 extra characters) at no extra cost.

Your Remington Rand representative will be proud to show and demonstrate this superb new Remington typewriter. See the new Remington *Super-riter* today.

**Remington Rand**

THE FIRST NAME IN TYPEWRITERS

# COLITHO BUSINESS SYSTEM

## SLASHED ORDER HANDLING

## COSTS FOR CONSUMERS

## COOPERATIVE ASSOCIATION

Replaced a cumbersome, costly catalog

Makes pricing for three trading areas easier

Gives customers up-to-the-minute information

Increased sales

Cut billing time one-third

Reduced clerical costs 15%



Wherever paper work requires more than one legible copy, a Colitho Business System can be used to speed the operation, eliminate transcription errors, and cut clerical costs. Colitho paper offset duplicating plates, plain or pre-printed, can be incorporated in single, multiple part, flat pack or roll forms. Colitho Business Systems provide for variables and blockouts, deletions or additions. Partial information can be added at any time. All business paper work lends itself to simplification through a Colitho System.\*

Regardless of the kind of business you are in, Colitho Systems offer time and

money savings in purchasing, manufacturing, distributing, selling, billing and accounting. For more information, mail the coupon attached to your business letterhead.

\*Where spirit duplicating equipment is used, the same results can be obtained with a Columbia Ready-Master System.

*Colitho Division*

COLUMBIA RIBBON & CARBON MFG. CO., Inc.

*Colitho*

OFFSET DUPLICATING

PLATES AND SUPPLIES

Colitho Division, COLUMBIA RIBBON & CARBON MFG. CO., Inc.  
701 E. Hill Rd., Glen Cove, New York

Please send information.

Our duplicating equipment is: Offset  Spirit

Name \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_

Zone \_\_\_\_\_ State \_\_\_\_\_

(Continued from page 178)

of a job only after it is completed, and that cost is used as a guide when there is a re-order. We believe that from the standpoint of cost control we can compare the cost of an order with both the estimated and the actual cost. Thus the manager of the printing department should be in a position to test production efficiency and also be less inclined to underestimate the cost of a job in order to build up his operations.

In comparing the cost of individual forms produced in our own printing plant with the cost of that form when produced by a commercial printer I have been impressed with one pattern which appears. The smaller the quantity of the order the greater the difference between commercial and State Mutual cost.

Based on my observations and experience I am convinced that comparisons of costs between individual companies may be more misleading than informative. Accounting techniques, especially those of cost accounting, involve, to a great extent judgment and personal opinion, in the distribution of expenses for cost determination. The influence of the personal touch, and even individual company policy may therefore result in the cost data reported by some other company being on a basis quite different from that used by your company in collecting cost information. Usually enough information is not available to permit the adjustments necessary to compare other company costs on a basis identical with that used by your company. However, a comparison of your printing costs with commercial printing costs is a valid comparison. This is the comparison which should serve as your guide in policy determination.

### NAMED GENERAL MANAGER OF UNDERWOOD SUPPLY DIVISION

E. T. Waters has been appointed general manager of the Underwood Corporation Supply Division with headquarters in Burlington, N. J. He will supervise all divisional activities including manufacturing, engineering and development and sales of the company's carbon papers and ribbons and other office machine supplies. Geo. A. Donaldson has been named sales manager of the Supply Division.

You Deserve to Own  
a Desk like this



IF YOU'RE the man who drives a good car . . . pays a little more for the best woolens . . . and appreciates the ultimate economy and satisfaction of buying and owning the very best, then you're the man who deserves to own the STEEL AGE *Executive* Desk. True, it costs a few dollars more than the conventional steel desk. But don't try to measure its superlative design, comfort, and rare metal craftsmanship in dollars. It can't be done. May we suggest that you call your STEEL AGE Dealer this week. He'll be delighted to give you the full particulars on the *Executive* Desk or any other member of the STEEL AGE family of Quality office furniture.

Steel Age

CORRY-JAMESTOWN MFG. CORP., CORRY, PA.

**REDIFIXT**

## BUSINESS FORMS CARBON INTERLEAVED

Continuous or Single Sets  
Invoices • Sales Slips  
Shipping Records • Accounting  
and Tabulator Bookkeeping  
Machine Forms • Any Form for  
Any Business Purpose

## NO PRICE RISE ON *RediFixt* **W-2** TAX FORMS for 1953

*Consolidated*  
Business Systems, Inc.

Dept. 006  
30 Vesey Street, New York 7

## Are Your Catalog and Information Files Up-to-Date?

Here's a way to add the latest data on new developments to your catalog and information files with a minimum of effort.

The Reader Service Department of Purchasing Magazine will obtain for you any of the new trade literature listed on pages 19, 20, 22, 24.

Use the convenient coupon on page 19. Simply circle the numbers of the items on which you want literature or further information.

Check these pages now, mentioning month of issue, and send your request to:

Reader Service Department  
**PURCHASING MAGAZINE**  
205 E. 42nd St., New York 17, N.Y.

### APSCO DISTRIBUTES SWEDISH STAPLER LINE

A line of staplers made in Sweden will be distributed in the United States by the Automatic Pencil Sharpener Co., 336 No. Foothill Road, Beverly Hills, Calif. They will be marketed under the trade name of "Apsco" through a reciprocal trade agreement.



The larger, Apsco Model 2002 loads 210 Apsco No. 2001 staples or any standard No. 1 wire staple. A unique finger-tip drawer makes loading of staples easy and the sliding anvil allows for either stapling or pinning. Non-clog and fool-proof, the Model 2002 may also be used as an efficient tacker. Finished in a beautiful forest green with bright parts of highly polished chrome on a base of copper-nickel to resist corrosion and wear.

Apsco Model 4004 provides a handy, low-cost, all-purpose stapler. This model also embodies the sliding anvil for stapling and pinning. The small convenient size and the easy removal of the base, if it is not needed, makes it a handy stapler plier that may be easily carried in the pocket. It loads 105 Apsco No. 4001 staples or any standard No. 1 wire staple.

### AMA WINTER CONFERENCE TO COVER WIDE RANGE

A perspective on the business picture today and tomorrow will be offered to top-level business executives from all over the United States at the American Management Association's mid-winter General Management Conference, to be held at the Hotel Statler, Los Angeles, Calif., Jan. 12-15.

One of the largest meetings on the A.M.A. calendar, the conference is the only one the association has scheduled for the West Coast during its 1952-53 season. Last year's General Management Conference in Los Angeles drew a record attendance of approximately 1,000.

Four special panel sessions will

be devoted to such current top managerial problems as the general economic outlook, business policy under the new Administration, management techniques, and labor relations. A full day will be devoted to principles, case study presentations, and questions and answers on the subject of developing executives for higher responsibilities. Feature papers will be presented on the corporate director's role in the enterprise system, possibilities and limitations of electronics in management, potential office cost savings through new technical applications, and human relations tools for effective labor utilization.

### NEW "ALL-IN-ONE" TELEPHONE FOR WALL OR DESK

A new "all-in-one" telephone, a combination wall-desk instrument designed to fit any application with a minimum of modifications has been produced by the Connecticut Telephone & Electric Corporation, Meriden, Connecticut. The phone is actually a universal local-battery telephone which can be converted to a



manual common-battery phone without adding either electrical or mechanical parts. The new telephone also can be converted quickly and easily to a common-battery dial phone merely by the addition of a dial and dial bracket.

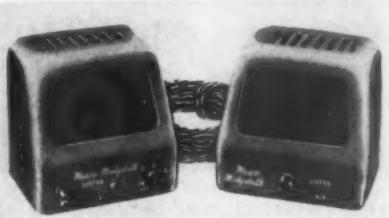
Called the Connecticut Wall-Desk telephone, it can be used on either wall or desk without alterations of any kind, thus necessitating only one stock of replacement parts.

The new phone is built to meet all the latest military specifications. It has been built to withstand unusual abuse and extreme climatic conditions. The handsets, equipped with Koiled Cords, are molded of a special thermoplastic material capable of resisting breakage when dropped from a height of twenty feet to a concrete pavement. The phone is supported by substantial rubber feet to prevent sliding on desks.

#### PORTABLE DICTATING MACHINE

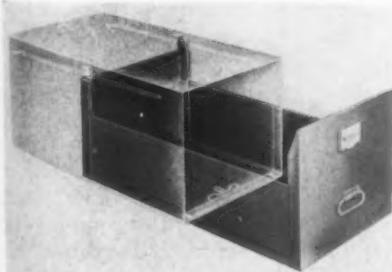
The simple motion of closing the lid, transforms the 54-CBS Voice-Master dictating machine into a self-enclosed portable instrument, with retractable handle. The machine weighs 11 pounds. Foldable paper dictation discs may be mailed in standard envelope. The Voice-Master is made by Magnetic Recording Industries, 30 Broad St., New York, N. Y.

#### TWO-STATION INTERCOMMUNICATION SYSTEM



Two-station intercommunication called the "Midgetalk" for room-to-room conversation is being introduced by the Mark Simpson Manufacturing Co., 32-28 49th St., Long Island City, N. Y. The remote station can be wired either for private or non-private operation. The master station has on-off switch, volume control, and on-off pilot light. Both stations have a press-to-talk switch, so that either may originate a call. The complete system consists of one master and one remote station with 50 feet of cable. It is easily installed.

#### TRANSFER FILING CASES HAVE NYLON BEARINGS

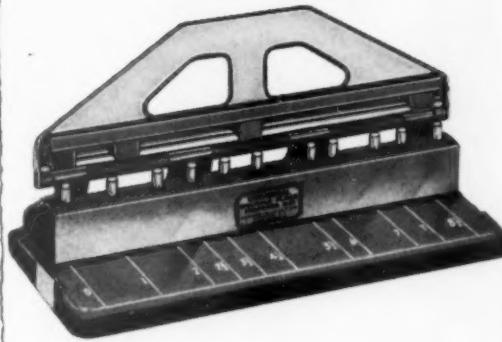


"Nylo-Glide" transfer file cases recently announced by Record Files, Inc., Wooster, Ohio, are said to be practically noiseless, as the drawer travels on nylon bearings. The nylon bearings require no lubrication or other maintenance, and tests indicate that the wear resulting from 10,000 operations is negligible. There is no binding or scraping when the drawer is opened or closed. The file is self-interlocking, easily stacked, dust-proof and fire resistant. It is made in more than 2,000 sizes.



#### *See this heavyweight punch*

up to 4 holes —  
in 12 sheets  
in one operation



N 21

*and this*



#### *versatile lightweight*



N 22

So small it fits easily into center desk drawer. So handy you'll wonder how you ever got along without it. This fixed punch—for 2½-inch centers—takes any size sheet. See this B & P Master Punch. Try it.



FOR EVERY RECORD —  
A WAY TO KEEP IT



Standard



product

BROOKLYN 1, N. Y.

# Tip from America's Top Secretaries

"My boss and I both appreciate the time saved since we started using Micrometric"

says  
LaVerne C. Campbell,  
Executive Secretary  
to Mr. Bonbright,  
Vice President  
in Charge of Finance,  
and Treasurer of  
Capitol Records, Inc.,  
Hollywood, California

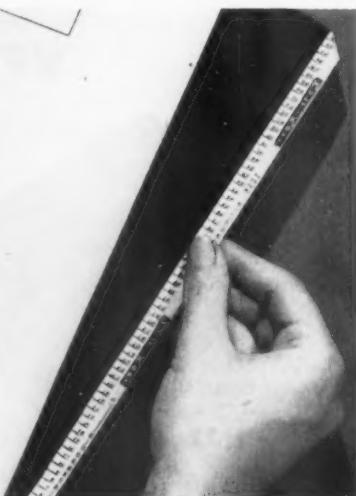


Top secretaries like Mrs. Campbell are busy women! They appreciate the way Webster's Micrometric exclusive numbered scale edge saves time and trouble on every typing job. The scale edge shows how many typing lines remain on any page — prevents "running-over" and takes the guess-work out of letter placement.

Work output increases because Micrometric "gets it right the first time." Secretaries like the way the uncoated scale edge keeps smudge off their fingers. Impressions are always clean and legible.

In leading secretarial schools and important offices, you'll find Webster's Micrometric at work. Long-lasting Micrometric costs no more than any good carbon — and it does more! There's a weight for every office use.

See Webster's complete line of duplicating and spirit supplies at your stationers.



## F. S. WEBSTER COMPANY

7 Amherst Street, Cambridge 42, Mass.

## AUTOMATIC PHONE ARM

Announcement is made by the Office Appliance Company, 159 New Montgomery St., San Francisco, Calif., of the Phonomatic—an automatic phone arm, which holds the receiver, leaving both hands free for work. The device is made entirely of metal, consisting of a combination of aluminum tubing, ball



and swivel jointed, to insure smooth, easy action. It has a flexible, free swinging arm, capable of holding the phone in any desired position.

The telephone is placed in the device's specially constructed base which is designed for any type of phone. A phone arm automatically connects and disconnects the phone.

## HUNGERFORD NAMED TO REMINGTON RAND SALES POST

Appointment of Harold R. Hungerford as administrative sales manager in charge of accounting and tabulating equipment has been announced by Remington Rand Inc.

Mr. Hungerford succeeds Henry W. Millang, who has been transferred to Newark, New Jersey where he will be branch manager in that area.

Prior to his present assignment, Mr. Hungerford was branch manager at Philadelphia, St. Louis, San Francisco and Portland, Oregon. He also organized the first training school program for the company for tabulating machine salesmen at the New York office in 1934.

## COMPTOMETER TO DISTRIBUTE PRINTING SERVICE SYSTEMS

Comptometer Division of Felt & Tarrant Mfg. Company, Chicago, has been appointed exclusive sales distributors in the United States for the Methods and Systems Division of Printing Service Inc., Detroit. The announcement was made by A. N. Koch, Comptometer vice-president in charge of sales.

Koch said that the Comptometer

sales representatives, located in all principal cities, will concentrate on sales of Printing Service standard writing board systems, in addition to the Comptometer line. The company manufactures and sells Comptometer adding-calculating machines.

#### ANNOUNCE COLLATING STACKER

Collating stacker of heavy-gauge steel, that holds and protects collated sets of sheets or forms awaiting further processing, which obviates accidental knocking over of stacks, is announced by Halverson Specialty Sales, 1219 West Chestnut Street, Chicago 22, Ill. The stacker is provided with handles for easy carrying from place to place, and has four rubber feet to prevent marring of desk or table surfaces. The base,  $11\frac{1}{4}$ " x  $11\frac{1}{4}$ " has a tilting platform which slants from  $4\frac{1}{2}$ " high down to  $2\frac{3}{4}$ ". This design assures that sheets are held firmly in place. Built to accommodate  $8\frac{1}{2}$ " x  $11$ " stock, the stacker sides are  $12\frac{1}{2}$ " high from the platform.

#### MICROFILMING EQUIPMENT FOR EVERY SIZE BUSINESS

A compact, portable and motorized microfilming camera which makes it possible for every size business to microfilm its records, was recently announced by The Flofilm Divn., Diebold, Inc., Norwalk, Conn. It is ideally suited for department operations where portability is desirable.

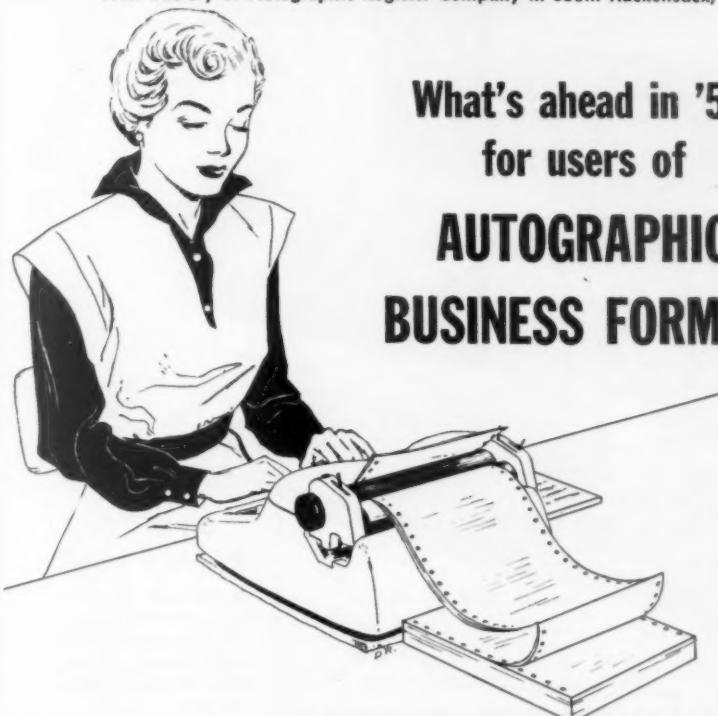


Operator is feeding letter-size in new portable microfilm camera at 90 ft. per minute

The new Flofilm camera eliminates all loading, threading and film handling through a unique magazine loading feature, and enables inexperienced personnel to microfilm all types of copy. The film cartridge holds 50 ft. of 16mm film—enough to copy 3600 checks or 1600 letter-size documents.



New Factory of Autographic Register Company in South Hackensack, N. J.



## What's ahead in '53 for users of **AUTOGRAPHIC BUSINESS FORMS?**

In 1953, users of Autographic Forms will find new solutions to old problems—made possible by completion of one of the largest and most completely equipped plants of its kind. This new factory, with more than three acres of floor space, will add substantially to our facilities for serving our customers.

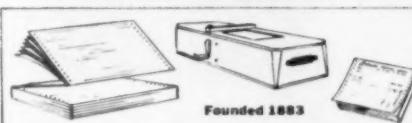
Is your forms problem one of delivery . . . of finding the right form design for a difficult record writing job . . . or one of getting better quality of printing or more legible carbon impressions?

Whatever your problem—for an effective solution try Autographic Forms Service in '53. Ask us now to quote on your printed form requirements.

If you would like to see samples of Autographic Forms that apply particularly to your business—just fill out the coupon below.

# *Autographic* **BUSINESS FORMS**

AUTOGRAPHIC REGISTER COMPANY  
219 7th Street, Hoboken, New Jersey



**AUTOGRAPHIC REGISTER COMPANY** 219

We would like to receive a folder of sample continuous forms for ..... kind of forms

Forms will be used on ..... type of machine

The nature of our business is .....

NAME.....

POSITION.....

COMPANY.....

STREET.....

CITY..... STATE.....

IN THE BEST PLANNED OFFICES *Crest* LINE OF COURSE



## Redoing YOUR OFFICES?

HERE IS A PLAN TO HELP YOU get the most out of your office space. The CRESTLINE Office-Plan-Rule is made of clear plastic with cut out templates for all furniture units. It is worked out on a  $\frac{1}{4}$ " scale to give a liberal 48 feet of floor space, and it is yours free. With the rule, you will also receive the full color catalogue on the famous CRESTLINE Steel Office Furniture and a booklet on the CRESTLINE File Line. Use the coupon below for your Office-Plan-Rule and catalogues . . . no obligation, of course.

### OFFICE- PLAN - RULE

A full foot rule with quarter inch scale, plus scale templates to make laying out an office an easy, pleasant job.

**FREE-CRESTLINE OFFICE-PLAN-RULE** is yours without obligation . . . just send in the coupon below.



#### SECURITY STEEL EQUIPMENT CORPORATION

20 MIDDLESEX ROAD, AVENEL, NEW JERSEY

Please send me the CRESTLINE Office-Plan-Rule and the two CRESTLINE Catalogues without obligation.

Name \_\_\_\_\_  
 Firm \_\_\_\_\_  
 Address \_\_\_\_\_  
 City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_



### REMINGTON RAND OFFERS FREE COPY LOCATOR

An exclusive new copy locator to be used with its line of Procel stencils is being offered free of charge by Remington Rand Inc., 315 4th Ave., New York 10, N. Y.

The transparent copy locator facilitates the alignment or centering of material to be typed on a Procel stencil. The guide lines on the Locator correspond exactly with those on the stencil, and by placing prepared copy in this folder (lining up the left edge with the fold), exact placement on a Procel stencil can be determined by checking space numbers and guide lines.

### FLEXIBLE FLOOR DUCT PROTECTS ELECTRIC WIRES ON FLOOR

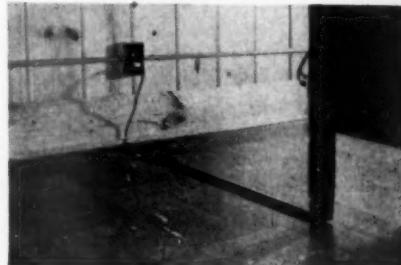


Illustration shows flexible over-the-floor rubber duct, known as Flexiduct, for the protection of electrical wires that of necessity may lie on the floor. The Flexiduct kit, product of Winders & Geist, Inc., 2219 North Cotner Boulevard, Lincoln, Nebr., consists of plug, receptacle and threaded rubber stripping. All that is needed for installation is to cement the rubber strip to the floor and to mount the receptacle on desk, bench or shelf with two screws. The stripping is flat and feather edged. The manufacturers state that the duct will withstand the shock of rollers on chairs and office equipment.

### NEW MACHINE ELIMINATES WASTE OF MAIL CAMPAIGNS

After a two-year period of testing in pilot installations, the Addressograph-Multigraph Corporation of Cleveland, announces new machine to eliminate the 30 to 50% waste which can often handicap a manufacturer's dealership campaign. The new machine known as the Tandem Class 3400-400 addresses mailing pieces and imprints dealers' identifications on the reverse side, all in one fast run through the machine. Dealers often fail to maintain lists properly, mail material too late, or forget it entirely. The cost of imprinting the literature (\$5 to

\$10 per thousand) may also be a factor, as may be the actual addressing.

By assuming the maintenance of dealership lists and employing the new Tandem Class 3400-400, manufacturers in addition to getting material into the mail on time and to the right persons, set forth the following additional advantages: Elimination of the problem of meeting varying local postal interpretations; close control of address lists as list cleaning and maintenance are performed by full time help in a central location; addressing and imprinting are performed in one fast operation in one handling, and the costs are cut approximately in half; and, overages and shortages are eliminated, since the exact number of pieces for each dealer are addressed and imprinted.

The new machine can handle forms from 3" to 17" in width, from 5" to 17" in length, as thin as one sheet of 20# bond paper or as bulky as a 32-page brochure. The machine operates at 5400 impressions per hour when using the automatic selector or 7500 impressions without it.

1 1 1

#### NEW CARBON PAPER SYSTEM SPEEDS WORK



New carbon paper packets, holding one to nine carbons, slightly graded as to length and bound with special loading board, to facilitate insertion of sheets, was recently introduced by the Carbon Paper Pac Co., 210 So. Clinton St., Chicago. The Carbon Paper Pac System, as it is termed, obviates the rolling, creasing and wrinkling that often develop when handling individual carbon sheets. The Pacs are loaded in advance of their actual use, and the typewriter operator has but to insert the filled Pac in the typewriter when making multiple copies. The manufacturer states that the carbon paper can be used 40 to 50 times with good results.

## automatic pencil sharpener co.

336 no. foothill rd. beverly hills, california

rockford, illinois  
toronto, canada





# "Better Seating Gave Us Better Work

*...and more of it!"*

says J. R. Buckman, Reservation Manager  
of Trans World Airlines

## The COSCO EXECUTIVE—

Designed by  
Seating Engineers to Reduce  
Fatigue—Increase Efficiency.

Businessmen are learning that fatigue, work-lag and absenteeism drop when **correct seating** is given consideration. That's why so many are choosing this COSCO Executive for employees ... for themselves. Here's a chair you can alter 6 ways to fit **your** body, and **your** idea of comfort ... in a matter of seconds—with no tools. And you sit on a foam-rubber-cushioned, saddle-shaped, revolving seat that's **luxuriously** comfortable. Sturdy, all-steel construction, one-piece "FORM-FLO" base and bonderized, baked-on enamel finish assure its long life and lasting beauty. You can choose from 4 harmonizing colors of durable, Du Pont "Fabrilite" upholstery. For full details, mail coupon today.



BETTER SEATING means BETTER WORK

### MODEL 18-TA COSCO EXECUTIVE

Only **\$47.50\***



Model 15-F  
SECRETARIAL—\$29.95  
(\$31.00 in Zone 2)



Model 20-LA  
SIDE CHAIR—\$27.50  
(\$28.50 in Zone 2)

\*\$49.50 in Florida, Texas and 11 Western states. (Zone 2)  
other models also available

**COSCO** Office Chairs

HAMILTON MANUFACTURING CORPORATION  
Columbus, Indiana

PLEASE ATTACH COUPON TO YOUR LETTERHEAD

COSCO Office Chairs  
Hamilton Manufacturing Corporation  
Dept. P-1, Columbus, Ind.

Yes, I would like the name of my nearest dealer and full details on COSCO office chairs. I am particularly interested in:

Secretarial chairs  Executive chairs  Side chairs

Firm \_\_\_\_\_

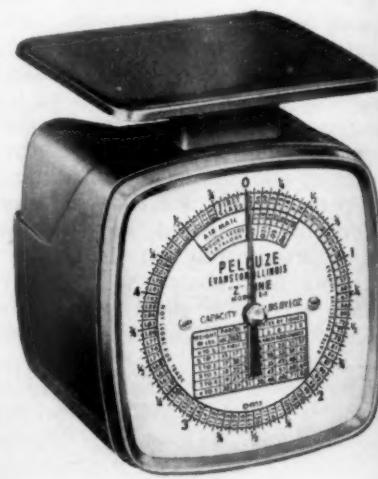
By \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_

## NEW POSTAL SCALE IS EASY TO READ

New postal scale designated as the Z line, is announced by the Pelouze Manufacturing Company, 1218 Chicago Avenue, Evanston, Illinois. It is designed to show at a



A wide post supports the platform

glance correct weight and mailing cost. An easy-to-read table shows parcel post rates tabulated by zones. The dimensions are as follows: 5½" high by 4" x 4½" wide. It has full five-pound capacity with 1/2 ounce graduations.

## AMA STANDARD FOR DESK TELEPHONE EQUIPMENT

Provisions for Installation of Telephone Equipment on Desks have been approved as American Standard (X2.1.2-1952), it is announced today by the American Standards Association. Recognition of the increased importance of concealing telephone wiring and apparatus in desks led to the development of the standard, says A. R. Hutchinson of Western Electric Company, chairman of the ASA subcommittee concerned with the project.

The standards sets up general specifications for wiring channels, mounting details for equipment, such as connecting blocks and bell boxes, and inconspicuous entrance holes for incoming wire or cable and for the telephone cord terminating in the telephone set. According to Mr. Hutchinson, facilities to accommodate concealed wiring can be readily incorporated during the manufacture of commercial desks at little additional expense.

Concealment arrangements suggested by the standard and shown

in drawings will be found adequate for 90 percent of desk installations. For more complicated or larger installations, where large-sized cables, connecting blocks or relay equipment may be required, special arrangements will be necessary.

Use of the standard should assure both that cables and wires will not be exposed on the desk, and that the desk will not be marred by screw holes upon removal of the wiring apparatus. Desk manufacturers are already providing arrangements for concealment, but adoption of the standard by the industry will bring about uniform installations.

The standard was developed by the cooperative effort of a committee representing the desk manufacturers, the telephone industry and desk users. Sponsor of the project is the National Office Management Association.

Copies of the American Standard Provisions of Installation of Telephone Equipment in Desks (X2.1.2-1952) are available from the American Standards Association, 70 East 45th Street, New York 17, N. Y. at 25 cents per copy.

UTILITY CABINET HAS  
TAMPERPROOF LOCK

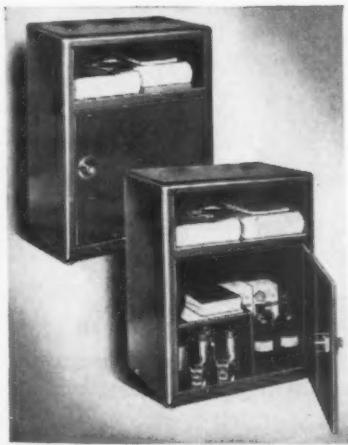


Illustration shows all-purpose utility cabinet for office use which has "tamperproof combination lock", being marketed by Halverson Specialty Sales, 1219 West Chestnut Street, Chicago, Ill. The round corner cabinet is made of 18 gauge steel, and door is fitted with a three-number combination lock; door has pin-type hinges which cannot be removed from the outside. The cabinet is 23" wide and the shelves are 15" in depth. Top shelf is 7-1/4" high. Four domes supporting the cabinet adjust the over-all height from 29½" to 30½".

# Esterbrook®

## "444" DESK PEN SET

ALWAYS READY TO WRITE...  
AND WRITES FOR MONTHS  
WITHOUT REFILLING!



Single and double sets in service and executive models to harmonize with any desk.

CHOOSE  
THE RIGHT POINT FOR THE WAY YOU WRITE



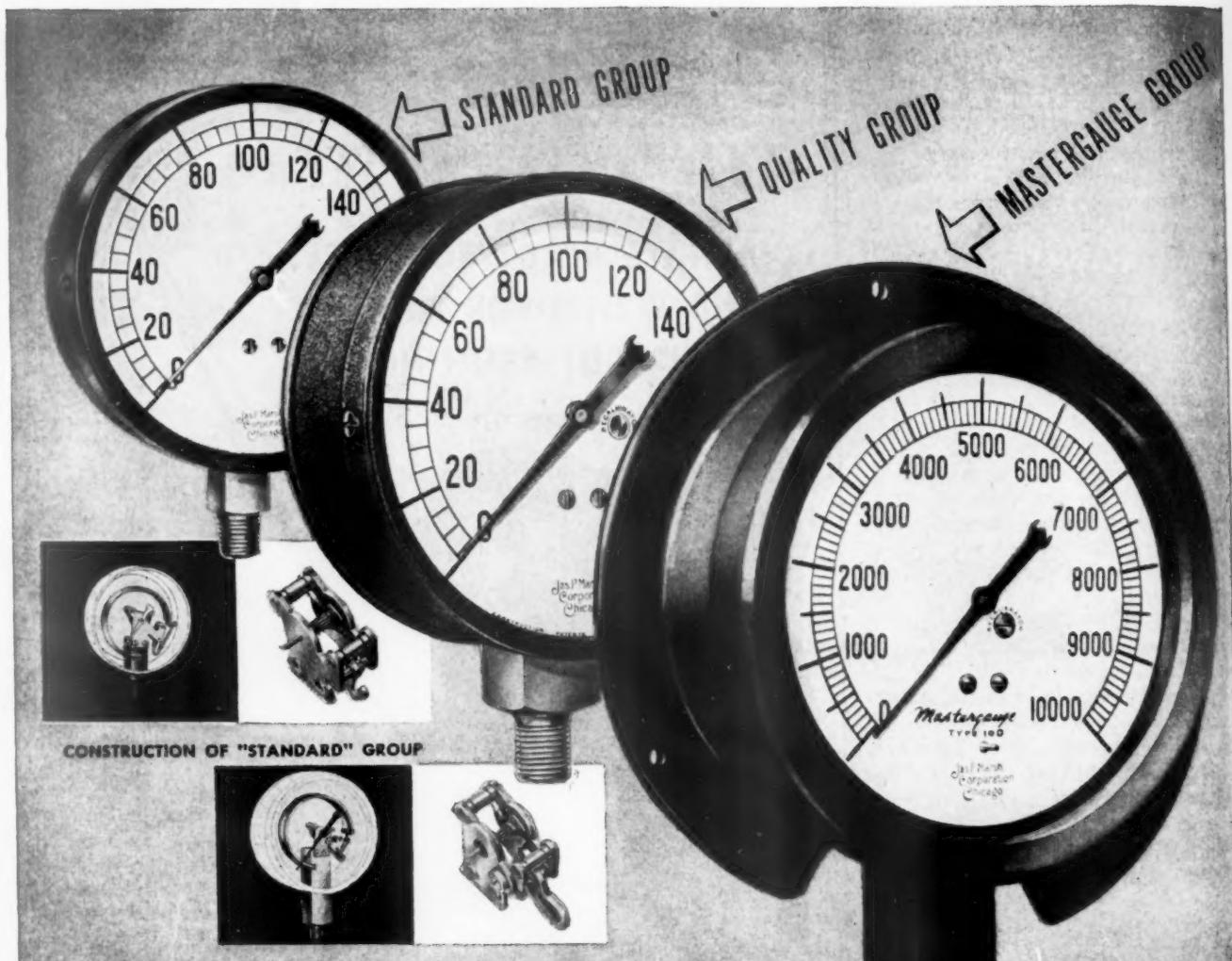
Only a few of the more popular points shown. All points instantly replaceable in case of damage.

ASK YOUR STATIONER FOR A DEMONSTRATION

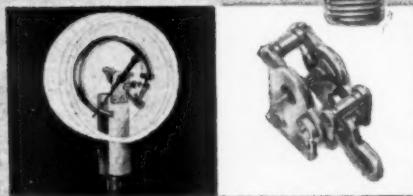
The Esterbrook Pen Company, Camden 1, New Jersey

The Esterbrook Pen Company of Canada, Ltd., 92 Fleet St., East, Toronto, Ontario

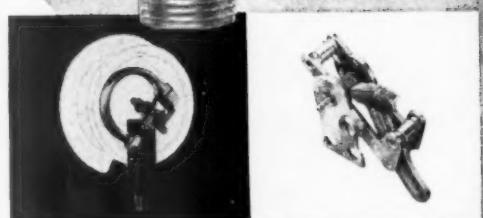
COPYRIGHT 1952, THE ESTERBROOK PEN COMPANY



CONSTRUCTION OF "STANDARD" GROUP



CONSTRUCTION OF "QUALITY" GROUP



CONSTRUCTION OF "MASTERGAUGE" GROUP

## A gauge for every need... each the best of its kind

Three basic groups of Marsh Gauges are shown here:

- The "Standard" group for the general run of gauge services.
- The "Quality" group for tougher service conditions.
- The "Mastergauge" group for the most extreme conditions.

While there is a considerable difference in the design and construction through these groups, the choice of a Marsh Gauge for a given application depends squarely upon the *service condition*.

This is because all Marsh Gauges — from lowest price to highest price — are high quality gauges. Each group or series contains the *best gauges of their kind*.

That is why you should use Marsh Gauges. Select the right Marsh Gauge and you use the most *economical* gauge for your requirement. We will help you select it.

**Write for Catalog**

**Marsh Instrument Co., Dept. G, Skokie, Ill.**

Sales affiliate of Jas. P. Marsh Corporation

Gauges • Thermometers • Water Regulating Valves • Solenoid Valves  
Heating Specialties

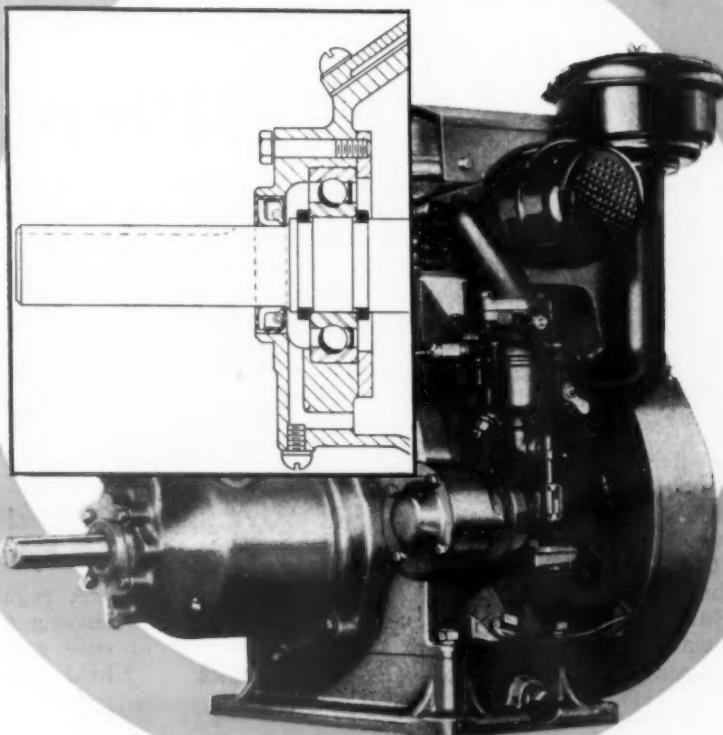
# MARSH GAUGES

THE STANDARD OF ACCURACY



# SAVE wherever you can!

## RETAINING RINGS will help



These inexpensive, efficient artificial shoulders save metal and money on Wisconsin air cooled heavy duty engines.

And in addition to saving money and metal, retaining rings save many costly hours in assembly time. Instead of the former wasteful practice of cutting down large shafts, you can redesign to groove smaller shafts and use these high grade steel rings. In your housings, too, rings will save money and improve your prod-

ucts, your machines and your profits.

Every product—metal, wooden or plastic—and every machine should be examined now to see where shoulders and collars can be redesigned to effect great savings by the use of steel retaining rings.

Let us show you how they can do an efficient job for you on your shafts or in your housings.

Write today for booklets on many types of National Retaining Rings.

### THE NATIONAL LOCK WASHER CO.

NEWARK 5, N. J.

MILWAUKEE 2, WISCONSIN



# AMONG THE Associations



## Alabama Association Past Presidents Honored At Annual Dinner Meeting

The Purchasing Agents Association of Alabama recently honored the past presidents of the group with a dinner meeting at the Thomas Jefferson Hotel, Birmingham. Approximately 150 members and guests were present at the affair.

The association was founded in February, 1928, with 14 charter members. First president was Chas. T. Doerr, Alabama Power Co.; J. E. Shelton, City of Birmingham, was vice-president; M. W. Hutchings, Debardeleban Coal Corp., was secretary-treasurer. It was extended to a statewide organization in 1945, and now has a membership of more than 150 purchasing men.

Twenty-one of the twenty-five past presidents of the association were present. Mr. Doerr is the only deceased member of the group. All the former presidents were intro-

duced individually at the meeting.

President Ernest Crain welcomed the visitors and ex-officials. A response was given by Herman C. Green, Republic Steel Corp., who was a charter member, and president in 1934-35.

Principal speaker was Douglas J. Early, manager of sales, Tennessee Coal and Iron Division, United States Steel Corp. His subject was "Some Observations of a Salesman". Mr. Early was both humorous and serious at times as he traced his experiences with purchasing men of the area.

## H. Thomas Austern Speaks At Chicago Assn. Meeting

A regular meeting of the Purchasing Agents Association of Chicago was held on Thursday evening, December 11, at the Hotel Sherman. Guest speaker was H. Thomas Austern, a member of the law firm of

Covington and Burling, Washington D.C., and chief counsel for the National Canners' Association. Mr. Austern is well known in purchasing circles for his appearance before the National Association of Purchasing Agents 1952 convention in Atlantic City. His subject at the Chicago meeting was "Let the Buyer Beware."

## Steel Executive Guest At Syracuse Assn. Meeting

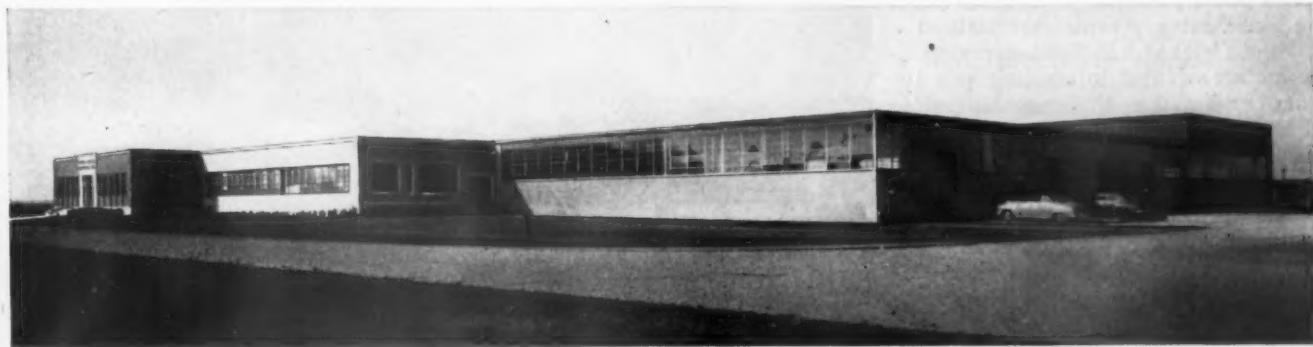
A regular meeting of the Purchasing Agents Association of Syracuse and Central New York was held at the Onondago Hotel, Syracuse, on Wednesday, November 19. Guest speaker was Keith P. Rindfleisch, vice president, United States Steel Supply Division, Chicago, Ill. Mr. Rindfleisch spoke on "The Steel Outlook." Portions of his address are printed elsewhere in the news columns of this issue.



Alabama past presidents: left to right, seated—H. L. Smith, J. E. Shelton, Kent Knight, LeRoy Holt, H. C. Green, J. Forrest Kimball, H. S. Savage, Harlan E. Cross, George H. Cole. Standing—H. J. Belcher, L. C. Teague, J. W. Sledge, Clyde H. Porter, George L. Wilson, Barnie B. Jones, T. Hoyt Prater, C. T. Moates, Herschel A. Wilson, Newman M. Yeilding, Greenville N. Wood, J. B. Noel. Not present for the picture were Joe P. Penick, M. N. Hoke, and Cal A. Lauthner.

# GOULD OPENS 21<sup>ST</sup> PLANT

## TO MEET INDUSTRIAL BATTERY DEMAND



Front and side views of Gould's new Kankakee, Ill., plant

### GOULD'S NEW KANKAKEE PLANT

which went into production on November 10 is the 21st Gould plant in the United States and Canada. Devoted entirely to the manufacture of storage batteries for industry, it gives Gould the additional capacity necessary to meet the increased demand for Gould batteries in all parts of the country. Thanks to these new facilities, Gould customers can expect even faster service than before.

# GOULD

## Industrial Batteries

GOULD-NATIONAL BATTERIES, INC., TRENTON 7, N. J.

Always Use Gould-National Automobile and Truck Batteries

## New England Assn. Visits New CBS Plant

Members of the New England Purchasing Agents Association recently visited the new plant of the Hytron Radio & Electronics Co., Division of Columbia Broadcasting System, Inc., in Danvers, Mass.

On December 8, the New England group held their Christmas meeting at the Hotel Bradford, Boston. Excellent cuisine and entertainment took the spotlight.

## National President's Night Held By Pittsburgh Assn.

A regular meeting of the Purchasing Agents Association of Pittsburgh was held on November 20 at the Hotel William Penn.

Guest speaker for the evening was H. W. Christensen, President of the National Association of Purchasing Agents and Director of Purchases of the Columbia-Geneva

Steel Div., United States Steel Co.

Prior to the regular meeting, the educational committee held a forum-type meeting on the subject, "How to Buy—Steel." Andrew M. Kennedy, Jr., director of steel purchases, Westinghouse Electric Corporation, discussed his company's method of providing the steel industry with their procurement policy and over-all requirements.

1 1 1

## Two Films Shown At Saginaw Valley Meeting

A regular meeting of the Saginaw Valley Purchasing Agents Association was held on November 11 at the Midland Country Club, Midland, Michigan.

Highlight of the meeting was the showing of two motion pictures—"Walls Without Welds" and "Building for the Nations"—presented through the courtesy of the National Tube Division, United States Steel Co. Mr. Robert Bailey was moderator.

## Wisconsin NIGP Names Committees For New Year

The appointment of committees to augment the work of the Wisconsin Chapter of the National Institute of Governmental Purchasing, Inc., were announced recently. Andrew Lehrbaummer, president, revealed that the appointments were made to further the efforts of the group. Named were: Liaison committee for working with the National Institute, B. L. Gill, chairman; purchasing agent for the city of Madison; Joseph V. Duffy, purchasing agent for the city of Kenosha; Jos. W. Nicholson, purchasing agent for the city of Milwaukee. Membership committee: Maurice S. Park, chairman, purchasing agent for Dane County, Wis.; Wm. L. Boyd, P. A. for Milwaukee school board; Geo. S. Quinn, P. A. for city of Racine. Program committee: Chairman, Edgar R. Roeck, P.A., Wauwatosa, Wis.; Miss Lydia Stetz, P.A. for Milwaukee County institutions; Elmer Wohlust, P.A. for Racine County.

## New Orleans Assn. Has Active Plant Visit Program

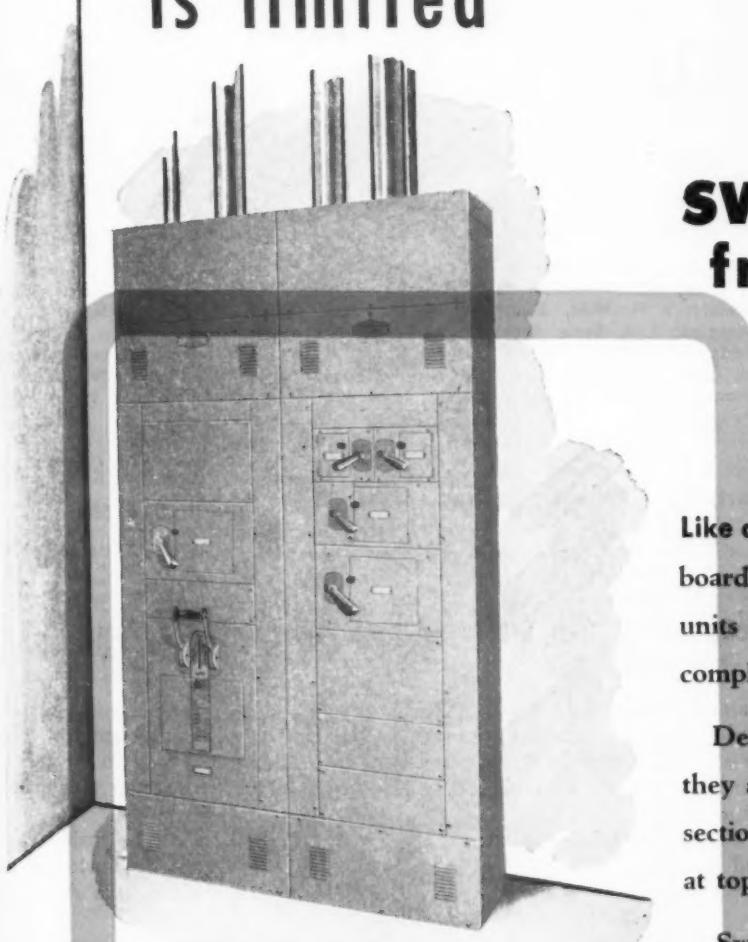
The plant visitation committee of the Purchasing Agents Association of New Orleans has been carrying on an active and interesting program under the chairmanship of Al Claverie.

At right is a group from the association having lunch at the Plymouth Cordage Plant in New Orleans, recently.

Below are shown the many members who turned out for a visit to the Johns-Manville Corp. plant earlier in the fall.



# where space is limited



The **FA** Switchboard, Front-Connected illustrated here is 54" x 96" x 14½" and contains two (2) 60 Amp., one (1) 100 Amp., two (2) 200 Amp., and one (1) 400 Amp. 3 P. Shutlbrak Switches; also space for two (2) 100 Amp. and two (2) 200 Amp. future switches.

**FA** Switchboards, Front-Connected are available in the following types and capacities:  
**SHUTLBRAK** — 30 to 1200 amperes, 250 volts AC or DC and 600 volts AC. Rotary type operating handles furnished on 30 to 200 ampere capacities. Straight handles on all others.

**KLAMPSWITCHFUZ** — 30 to 600 amperes, 250 volts AC or DC.  
**SNUFARC** — 30 to 200 amperes, 600 volts AC.

## INSTALL



## SWITCHBOARDS front-connected

Like all **FA** Switchboards, these space-saving boards are built from standard, pre-assembled units that fit readily together to form one complete assembly.

Designed for floor mounting against wall, they are constructed of standardized unit type sectional enclosures with integral pull boxes at top and bottom.

Switching units are either Shutlbrak or Klampswitchfuz or Snufarc, plug-in design, permitting ready interchangeability and replacement without the use of tools.

Want to know more about these light and power distribution units? Your nearest **FA** representative, listed in Sweets, will be glad to give you complete information.

# Frank Adam Electric Co.

P. O. BOX 357 ST. LOUIS 3, MISSOURI

Makers of BUSDUCT • PANELBOARDS • SWITCHBOARDS • SERVICE EQUIPMENT • SAFETY SWITCHES • LOAD CENTERS • QUIKHETER



Our 61st  
Year



**PUBLIC BUYERS:** Members of the Pacific Northwest Public Buyers Association at a recent meeting in Victoria, B.C., are as follows: left to right, standing: H. Gwilliam, B.C. Power Commission; J. Cook, Burnaby School Board, Burnaby, B.C.; L. D. Metzger and A. P. Carlson, City of Seattle; H. A. Lemarquand, University of British Columbia; J. H. Wild, Bonneville Power Admn.; C. O. Calder, P.U.D. #1, Chelan County, Wenatchee; C. B. Jones, State College of Washington; J. A. Syme, Royal Jubilee Hospital, Victoria; A. W. Anthony, Pacific Great Eastern Rwy.; D. Markley, Prince County, Wash.; R. Bridge, Vancouver School Board; W. Penny, City of Vancouver. Left to right, seated: G. W. Yates, City of Portland; J. W. West, Multnomah County; W. B. Diekieson, Greater Victoria School Board; L. C. Stewart, Bonneville Power Admn.; P. R. Hendricks, City of Seattle; G. E. Sharpe, City of Victoria; H. A. Clarke, Bonneville Power Admn., and H. S. Jedboult, Corporation of the District of Burnaby.

### Sam Marsh Guest At St Louis Assn. Meeting

A regular meeting of the Purchasing Agents Association of St. Louis was held on November 25 at the Hotel Sheraton.

Professor Sam Marsh was guest speaker for the meeting. His subject: "Let's Try Free Enterprise."

The "St. Louis Products Display" sponsored by the St. Louis Association, has been scheduled for February 5 and 6, at the Hotel Jefferson. George S. Forbes is general chairman, Frank J. Jost is vice-chairman.

The Association's annual Christ-

mas party was held on Saturday, December 13, at the Hotel Chase. Gifts for the ladies and attendance prizes were among the features.

### Rhode Island Assn. Holds Christmas Party

The annual Christmas meeting of the Rhode Island Purchasing Agents' Association was held on December 12 at the Sheraton-Biltmore Hotel, Providence.

Gifts and entertainment were provided for members and guests.

### Past President's Night Held By Cleveland Assn.

The November 20 meeting of the Purchasing Agents Association of Cleveland, Inc., was held at the Hotel Allerton. An open forum session on the subject "What Constitutes Adequate Purchasing Department Records?" was arranged by Mr. Chet Jones of Diamond Alkali. This was followed by a meeting in the ballroom honoring past presidents.

Bob Keach, 1940-41 president, was guest speaker and presented a talk, "A Past President Looks Ahead."



**ST. LOUIS CHRISTMAS PARTY;** Scene at the annual holiday affair of the Purchasing Agents Association of St. Louis, held in the Hotel Chase

Master Fluid-Drive units make use of a fluid coupling so designed that it can be interposed easily between the motor shaft and the output shaft (or motor shaft and first stage of gears of a gear-motor). Use Master Fluid-Drive Motors and gain these advantages.

**SMOOTH ACCELERATION.** With the fluid drive, the load is gradually accelerated . . . no sudden jerk at starting.

**FULL POWER.** Since there is no load on the motor when it starts, it very rapidly attains full running speed and the duration of the starting current inrush is greatly reduced.

**CUSHION EFFECT.** Provides cushioned starting . . . protects motors, gears, and driven equipment from damage from severe shock loads.

**WIDE APPLICATION.** Fluid-Drive Motors are ideal for high inertia applications where it takes a long time to bring the load up to speed . . . for starting crane travel drives without jerking and swinging the load . . . for conveyor drives especially where they are handling fragile material . . . for agitators, textile machinery, presses, extruders, winding machinery, food machinery, laundry machinery, ball mills, calenders, machines, etc.

**SIZES.** Master Fluid-Drive Motors are available in sizes approximately  $\frac{1}{2}$  to 1.5 horsepower.



Five basic types of gear-motors are also available with Fluid Drives.

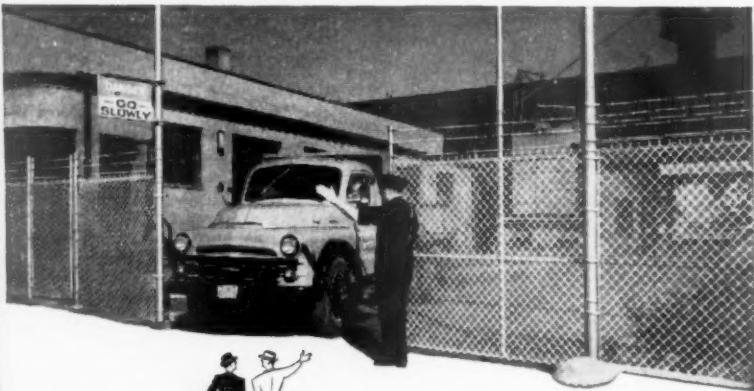
## cushioned power

THE MASTER ELECTRIC COMPANY • DAYTON 1, OHIO



# PAGE FENCE - Since 1883

• AMERICA'S FIRST WIRE FENCE •



**Defense** against hazards which could hinder or stop production is a major function of Page Chain Link Fence, guardian of persons and property for more than 60 years. NOW is the time to consult the skilled Page Fence erecting firm near you, whose name we will send with fence data on request and who will submit cost estimates, no obligation. For information

**Write** to PAGE FENCE ASSOCIATION in Monessen, Pa., Atlanta, Bridgeport, Chicago, Denver, Detroit, Los Angeles, Philadelphia, New York or San Francisco.

PRODUCT OF PAGE STEEL & WIRE DIVISION OF AMERICAN CHAIN & CABLE COMPANY, INC.



## MALLEABLE IRON CASTINGS that you can depend upon!

The right connection—for the malleable iron parts you need—can be a source of satisfaction to you.

Many, many leading makers of durable goods use Moline Iron Works Malleable Iron Castings to uphold the quality of their products.

Good service, quality control and reasonable prices are three reasons why your connection with Moline Iron Works can be both a pleasant and profitable one. We invite your specifications for quotation.

The parts shown here are representative of our production for automotive, farm implement, appliance and railroad customers.

**MOLINE IRON WORKS**

Moline, Illinois, U. S. A.



## President Christensen Guest At New York Assn. Meeting

The Builders' Exchange Club was scene of the November 18 meeting of the Purchasing Agents Association of New York.

Featured guests for the session were H. W. Christensen, President of the NAPA and George A. Renard, Secretary-Treasurer. President Christensen's address was entitled "What Are We Actually."

Richard D. Crow, training director for the United States Rubber Company, was featured speaker at the afternoon forum meeting. Mr. Crow, in his second appearance before the forum on the subject of the training and development of office personnel, demonstrated and illustrated some of the outstanding methods and techniques used in the development of office personnel, as well as management people. Stanley W. MacKenzie presided at the session.

† † †

## Buffalo Assn. Holds Christmas Party

The Purchasing Agents Association of Buffalo held a gala Christmas Party on December 10 at the Hotel Sheraton. Fifteen turkeys were raffled off and members tried their luck at games of chance.

† † †

## Montreal Association Holds Meetings

J. A. Lyone Heppner was guest speaker at the November 18 meeting of the Purchasing Agents Association of Montreal held at Sheraton Hall, Mount Royal Hotel. Mr. Heppner, who has had extensive selling experience, chose as his topic "Opportunities Unlimited."

The December 16 meeting of the Association was held in the Champlain Room of the Mount Royal Hotel. Jack Radford, owner and manager of Radio Station CFJR, Brockville, Ont., was guest speaker. Members had their suppliers' salesmen as guests, following an annual custom.

† † †

## Rochester Assn. Holds Annual Christmas Party

The Rochester Association of Purchasing Agents held its annual Christmas Party on December 17 at the Rochester Club.

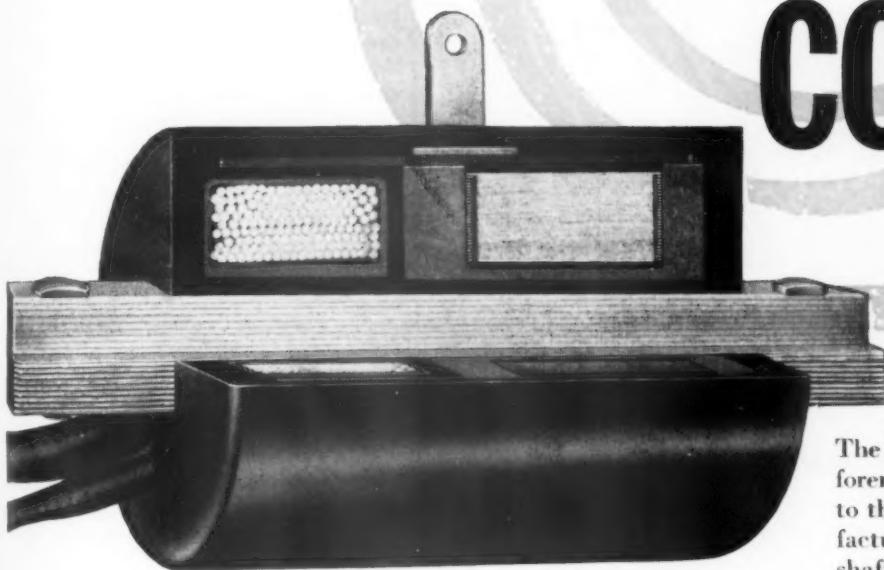
Each member was presented with a gift and the evening's program featured novelty entertainment and plenty of music.

# BENDIX

THE MOST TRUSTED NAME  
IN MAGNETOS

## Leads Again

# with the Exclusive HIGH OUTPUT COIL!



### ONLY BENDIX MAGNETOS GIVE YOU ALL THESE FEATURES

- Simplicity in Design
- High Output Coil
- Lower Operating Cost
- Minimum Lubricating Requirement
- Light Weight
- Higher Voltage at Starting Speed
- Constant Spark over Entire Speed Range
- Compact and Sturdy Construction

The Scintilla Magneto Division of Bendix, foremost supplier of ignition equipment to the aviation industry, offers the manufacturer of small industrial engines crank-shaft and flywheel magnetos with a new and exclusive high output coil that adds immeasurably to engine performance.

With coil windings side by side instead of the conventional high tension superimposed upon low tension, output is materially increased providing easier starting and better performance.

Regulated voltage with increased breaker life and reduced electrical stresses assure trouble-free operation and longer life.

For better engine performance it will pay you to insist on Bendix magnetos. They are available for every type of small engine and every pricing requirement. Complete information on request.

*Bendix*

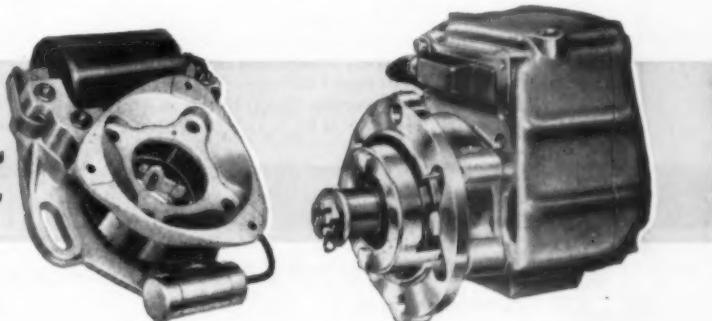
SCINTILLA MAGNETO DIVISION of

SIDNEY, NEW YORK



Export Sales: Bendix International Division, 72 Fifth Avenue, New York 11, N.Y.

FACTORY BRANCH OFFICES: 118 E. Providencia Avenue, Burbank,  
California • Stephenson Building, 6560 Cass Avenue, Detroit 2,  
Michigan • Brouwer Building, 176 W. Wisconsin Avenue, Milwaukee,  
Wisconsin • 582 Market Street, San Francisco 4, California



# When you need

# Thykatrons

## specify

# RCA



For prompt service on  
RCA Tubes call your local  
RCA Tube Distributor

## RCA Thykatrons help to prevent costly shutdowns

AS A RESULT of rigid quality control methods and stringent tests, RCA Thykatrons provide reliable performance even under tough service conditions. You get *Performance Security* with RCA Thykatrons. This means extra hours of service . . . fewer shutdowns of equipment due to tube troubles . . . equipment operation at higher efficiency.

### TECHNICAL INFORMATION FOR YOUR REFERENCE

The 20-page booklet "RCA Power and Gas Tubes" contains technical information on a wide line of thykatrons—gas and mercury-vapor types, triodes and tetrodes, miniatures and jumbo sizes. For your FREE copy write to: RCA, Commercial Engineering, Section 70AT, Harrison, N. J., or obtain a copy from your local RCA Tube Distributor.



**RADIO CORPORATION OF AMERICA**  
ELECTRON TUBES

HARRISON, N. J.

### Gala Holiday Meeting Held By Twin City Assn.

The Twin City Association of Purchasing Agents held its holiday meeting on December 10 at the Hotel Radisson. Each member brought new and used gifts for distribution to underprivileged children by the Minneapolis Community Chest.

Mr. Ted Suenan presented a discussion on "Handling of Reject Materials" at a pre-meeting huddle. Dr. Heinz Luedicke, executive editor of The Journal of Commerce of New York was the evening's featured speaker. The evening's entertainment was supplied by The Zuhrah Temple Chanters and Mr. Clyde Olson, local organist.

In his talk, Dr. Luedicke revealed that preliminary results of a survey by his paper showed that business men, on the whole, feel more confident about the level of business throughout 1953 than most economists. The much-talked-about post-defense slide off, the survey showed, is not expected by the majority until 1954. This, said Dr. Luedicke, is in contrast to the opinion expressed by most economists, who believe that the first signs of such a slide-off will become visible by mid-1953.

Commenting on the survey, Dr. Luedicke agreed that, in all probability, inflationary and deflationary forces next year will remain pretty well balanced.

"A revival of inflationary pressures either as a result of a new wage-price spiral or due to budgetary malpractices is extremely unlikely", he said.

### Utah Association Announces New Members

Among new members of the Purchasing Agents Association of Utah, recently reported are:

Morris Wiscombe, who joined in the capacity of assistant purchasing agent for Columbia-Geneva Division, U. S. Steel Company, at the Geneva steel mill; and Lee R. Swasey, purchasing agent for Westvaco Chemical Co., Rock Springs, Wyo. Mr. Wiscombe takes the membership held by George Ten Eyck for several years. Mr. Ten Eyck was recently transferred to the company's general offices in San Francisco.

Norman O. Williams, recently named purchasing agent for the Keyes Tank Company, Provo, Utah, fabricators of steel tankage and piping, is also a new member of the association.

**Wagner**

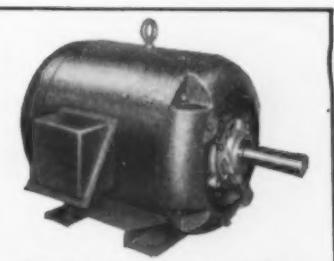
## Protected Type Motors *solve tough production problems*

Do you need motors to operate under severe conditions? If you do—you can solve your problem easily with Wagner's complete line of protected type motors. They are specifically designed for use wherever EXTRA protection is demanded—for bearings or windings...against corrosive vapors or abrasive dusts...in explosive atmospheres or in exposed outdoor locations.

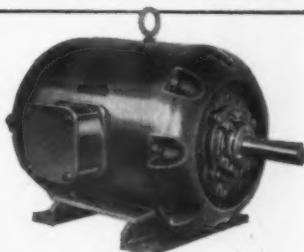
In their specific applications, each of these Wagner Motors assures complete protection of vital parts. Wagner Motors are backed by more than sixty years of motor building experience.

\* \* \*

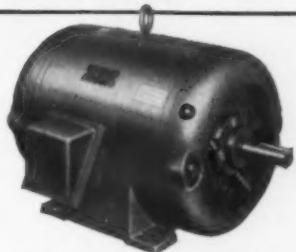
A Wagner engineer will be glad to help you select the correct motor for your specific application. Consult the nearest of our 32 branch offices, or write for Bulletin MU-185 for complete information.



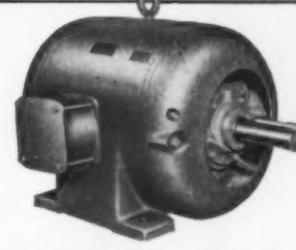
TYPE CP—Totally-enclosed Fan-cooled. Steel frame. 1 to 250 hp.



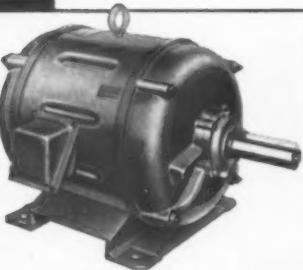
TYPE HP—Explosion-proof. Steel frame. 1 to 250 hp.



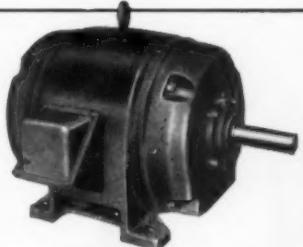
TYPE EP—Totally-enclosed Fan-cooled. Cast iron frame. 2 to 250 hp.



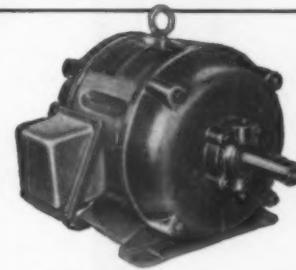
TYPE JP—Explosion-proof. Cast iron frame. 2 to 250 hp.



TYPE RP—Drip-proof. Steel frame. 1/6 to 400 hp.



TYPE XP—Splash-proof. Cast iron frame. 3/4 to 200 hp.



TYPE TP—Totally-enclosed, non-ventilated. 1/4 to 15 hp.



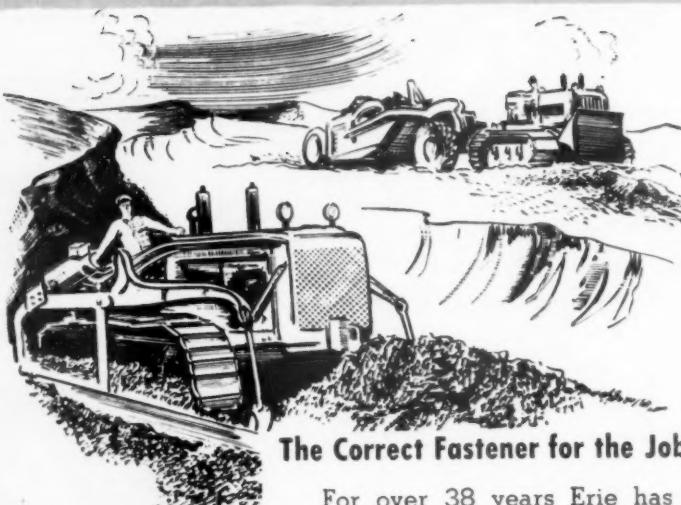
**WAGNER ELECTRIC CORPORATION**  
6360 Plymouth Ave., St. Louis 14, Mo., U.S.A.

ELECTRIC MOTORS • TRANSFORMERS • INDUSTRIAL BRAKES  
AUTOMOTIVE BRAKE SYSTEMS—AIR AND HYDRAULIC

BRANCHES IN 32 PRINCIPAL CITIES

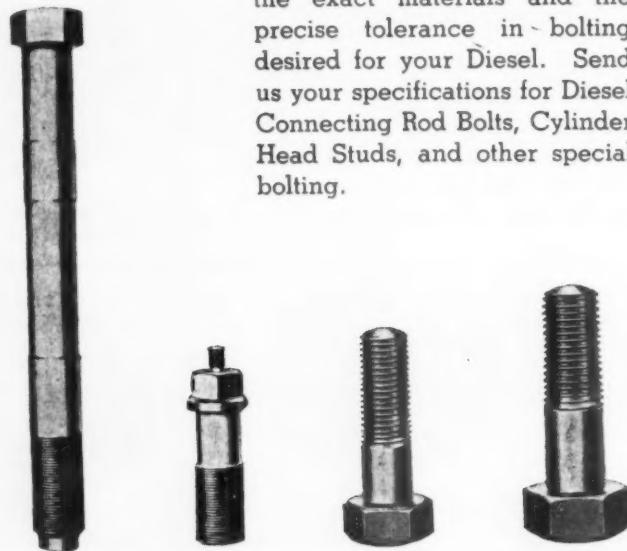
M53-10

# For DEPENDABILITY IN CONSTRUCTION EQUIPMENT



**The Correct Fastener for the Job**

For over 38 years Erie has manufactured bolts and studs to the specifications of Diesel Engine builders. This specialized experience gained in working with leading Diesel designing engineers assures you of getting the exact materials and the precise tolerance in bolting desired for your Diesel. Send us your specifications for Diesel Connecting Rod Bolts, Cylinder Head Studs, and other special bolting.



**ERIE BOLT and NUT CO.**  
ERIE • PENNSYLVANIA

STUDS • BOLTS • NUTS  
ALLOYS • STAINLESS  
CARBON • BRONZE

**Representatives in Principal Cities.**

## McVicar Guest At Tri-State Assn. Meeting

The Tri-State Purchasing Agents Association held its regular meeting on November 18 at the Prichard Hotel, Huntington, W. Va.

Mr. C. Warner McVicar, Assistant Vice-President—Purchasing for the Rockwell Mfg. Co., Pittsburgh, was guest speaker and chose as his topic "The Value of a Purchasing Manual to Purchasing and Management."

## Two December Meetings Held By Tri-State Assn.

On December 9, the Tri-State Purchasing Agents Association held a meeting at the Marietta Country Club. A round table Discussion led by B. G. Ferguson of the Electro Metallurgical Division provided the members with an interesting and informative evening.

G. H. Trumbo of the McJunkin Corporation was guest at the December 17 meeting held by the Association at Charleston Airport. Mr. Trumbo spoke on "Title to Purchased Goods."

## "Policy In Foreign Affairs" Rhode Island Meeting Topic

The Rhode Island Purchasing Agents Association held its monthly meeting on November 24 at the Narragansett Hotel. Dr. Henry M. Wriston, President of Brown University and an authority on foreign and domestic affairs was guest speaker. His talk was entitled "Policy in Foreign Affairs."

## Tin Scarcity "A Myth" New Booklet States

The plentiful supply of tin in Malaya and the vital role tin plays in the Free World are the themes of a 20-page, illustrated booklet published by The Malayan Tin Bureau, Washington, D. C. The booklet flouts the idea that tin is scarce and denies that Malayan tin producers have formed a cartel to control production and prices.

How health, security and standard of living in the United States depend upon tin is concisely set forth. The booklet says that America uses 22 billion tin cans a year—requiring half of the tin used in this country. Stressing tin as a key component of many bearing metals and

(Please turn to page 206)

# "No Wonder These G-E Fuses Are So Accurate ...they're SILVER-PLATED!"

"You can't beat silver as a conductor of electricity. That's why General Electric's new renewable fuse with silver-plated contact surfaces appeals to me. Silver-plating helps keep the ferrules or blades on G-E renewable fuses from heating up as blades or ferrules on ordinary fuses do because of copper oxidation. This means fewer replacements, fewer shutdowns for my company—fewer emergency calls for me."

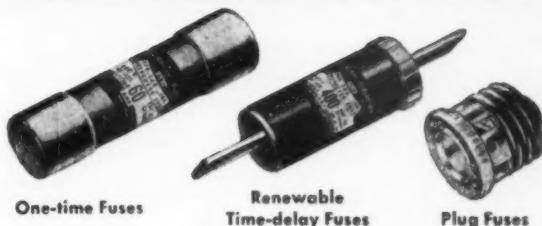
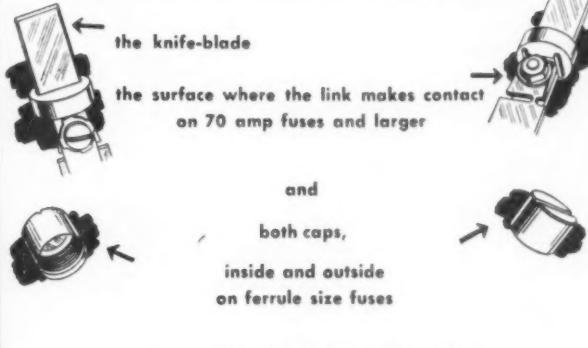
## You'll like these other features of G-E renewable fuses too

1. Simple three-piece construction of both knife-blade and ferrule types.
2. Newly designed links give accurate and consistent time-delay.
3. Ribbed cap on knife-blade sizes gives better grip than knurling. You can tell at a glance which end comes off.

For complete data, address Section D49-170, Construction Materials Division, General Electric Company, Bridgeport 2, Connecticut.



### At no extra cost to you General Electric Silver-Plates



### GENERAL ELECTRIC FUSES DEVELOPED TO PROTECT G-E EQUIPMENT

The G-E fuses available to you are the same high-quality fuses that were developed to protect and maintain top performance of apparatus and equipment bearing the General Electric nameplate.

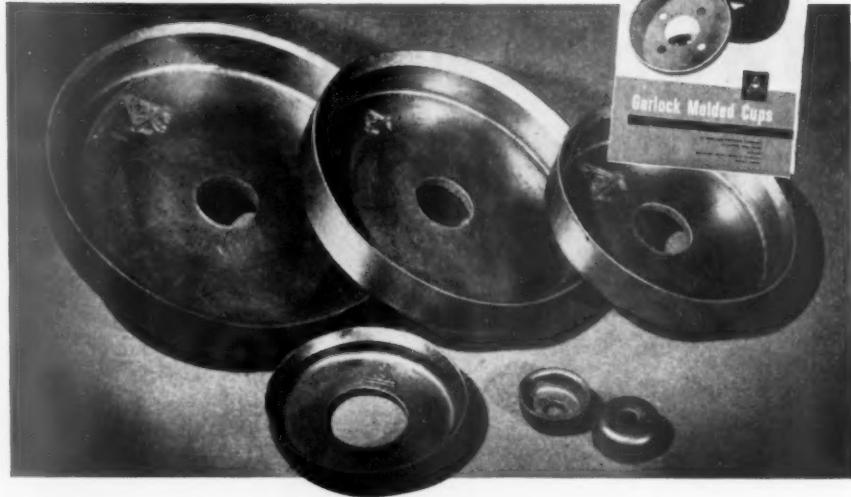
General Electric makes all standard fuse ratings; all G-E fuses are listed by Underwriters' Laboratories, Inc.

*You can put your confidence in—*

**GENERAL ELECTRIC**



New Garlock Molded Cups Folder describes in detail our complete line of cups. Write for your copy today!



## GARLOCK MOLDED CUPS

### For Pump Pistons— Hydraulic Service— Pneumatic Equipment

#### A COMPLETE LINE OF CUPS FOR INDUSTRIAL USE

**G**ARLOCK Molded Packing Cups are made from the highest grade materials to rigid specifications for long, trouble-free service. These cups are made in many types and styles, each designed and constructed for a specific service condition.

**BITAN\*** Leather Cups, available for practically any cylinder diameter size, are recommended for use against cold and hot water, oils, gases, and solvents. For hot oil service up to 250°F., specify synthetic-rubber-impregnated Bitan leather cups.

**Rubber and Synthetic Rubber Cups with fabric insertion** are made in a wide range of material combinations for cylinder diameters from less than  $\frac{1}{2}$ " up to and including 16". For service against air at high or low pressures, against oils, and on heavy duty hydraulic equipment.

**Cups for Pump Pistons** are available for standard cylinder sizes.

*Start cutting maintenance and replacement costs now—  
standardize on Garlock Molded Cups.*

THE GARLOCK PACKING COMPANY, PALMYRA, NEW YORK  
In Canada: The Garlock Packing Company of Canada Ltd., Toronto, Ont.

\*Registered Trademark

**GARLOCK**  
PACKINGS, GASKETS, OIL SEALS,  
MECHANICAL SEALS, RUBBER EXPANSION JOINTS



(Continued from page 204)  
as the prime ingredient of solder, the booklet cites the fact that almost all of the 250,000 manufacturing plants of the United States, employing more than 14 million people, depend upon tin directly or indirectly.



### Bituminous Coal Annual Features Major Mining States

Copies of the 1952 edition of its *Bituminous Coal Annual*, the fifth in a series, are being distributed by the Bituminous Coal Institute, public relations department of National Coal Association.

In words, figures, pictures, and graphics, according to Ralph C. Mulligan, BCI's director of public relations, the new 176-page volume "records the further progress of the industry in terms of improved efficiency and safety in mining, betterments in coal utilization, new uses and ever-widening markets, and the bright horizon for coal in the years ahead."

Some of the basic data contained in previous *Annuals*, to which has been added the most recent available figures, is found in the '52 book, along with much new statistical material. The text, pictures, and graphics are new and different. The book begins with a comprehensive review, "Report of 1951-1952 in the Bituminous Coal Industry." Then a series of stories about the states which are "richly endowed with coal" is introduced as a new feature of the 1952 *Annual*. West Virginia, Pennsylvania, Kentucky, Illinois, Ohio, Virginia, Indiana, Alabama, Utah, and Tennessee are treated separately in that order. Colorado and Wyoming are discussed together as are Arkansas, Iowa, Kansas, Missouri, and Oklahoma.

Another innovation is a special 16-page pictorial supplement—with more than 40 illustrations—showing typical scenes of modern mechanized mining operations, million-dollar coal preparation plants, and coal at work in America.

Still another new feature in the yearbook is a folded insert, "Cutaway View of a Typical Modern Underground Coal Mine," tracing the step-by-step operations in the mining of coal and its preparation for shipment.

Statistical tables (64 in all), graphs, and charts—all on timely subjects—complete the reference-type information in the '52 volume. Another section describes the manifold activities of the National Coal Association, BCI's parent organization.

der,  
most  
ring  
loy-  
de-  
ctly.

tes  
f its  
fifth  
d by  
pub-  
cational

and  
n C.  
public  
lume  
f the  
effi-  
etter-  
uses  
d the  
years

ained  
n has  
available  
book,  
l man-  
and  
t. The  
ensive  
n the  
hen a  
states  
with  
feature  
Virginia,  
Illinois,  
Alabama,  
reated  
Colorado  
gether  
Miss-

special  
—with  
showing  
mechan-  
million-  
s, and

in the  
"Cut-  
Modern  
tracing  
in the  
aration

in all),  
timely  
ference-  
volume.  
the mani-  
al Coal  
ganiza-

Fig. 2608, 200-pound  
Bronze Globe Throttling  
Valve. A Powell design  
that permits full flow  
through the seat when  
wide open. Has special  
bronze stem and stain-  
less steel disc and seat.

## For "sound economy," standardize on **POWELL VALVES**

By installing Powell Valves in all your lines, you can minimize maintenance and "down time," eliminate the confusion and waste incurred in stocking spare valves and parts of different makes, and avoid the costly results of misapplication, or using valves in services for which they are not specifically adapted.

**The Wm. Powell Company**  
Cincinnati 22, Ohio

# POWELL

BRONZE, IRON, STEEL AND CORROSION-RESISTING VALVES



# with KEX wiping towels...

I BUY WIPES—  
NOT WEIGHT



"I decided long ago to stop buying scrap rags and waste by the pound and switch to Kex wiping towels because a lot of the stuff we were getting wasn't usable. It had no uniformity and the men had to pick and choose the right piece for every job. That isn't true with Kex—every square inch is usable."

"After the first few months of using Kex Service my month-end cost for wipers was down substantially! The men have a uniformly-sized, absorbent towel for every job. And we don't run the risk of scratching or damaging delicate precision machinery."



**YOU DON'T BUY A THING**—just pay a low monthly rental. Kex towels are distributed nationally—for complete information, see your Classified Telephone Directory for nearest Kex distributor, or write Kex National Service, 295 Fifth Avenue, New York 16, N.Y.

**"KEX"** **NATIONAL  
SERVICE**  
**REG. U.S. PAT. OFF.**



***It isn't Kex unless it's imprinted with the Kex name***

## Issue New Edition of Plastics Data Handbook

Publication by the Manufacturing Chemists' Association, Inc., of a new revised 4th edition of "Technical Data on Plastics", an industry handbook which describes and catalogs properties of all commercially available plastics, has been announced.

The 184-page book covers 24 types of plastic materials—three more than the last edition. It also contains two new sections which show properties of various plastics when made in the form of foams or thin films.

The materials for which data are published for the first time are alkyd and silicone molding compounds and epoxy resins. Other types of plastics covered in the book include urea-formaldehyde molding materials, melamine-formaldehyde molding materials, phenolic molding materials, cast phenolic resins, laminated thermosetting products.

The book is available from the Manufacturing Chemists' Association, Inc., 246 Woodward Building, Washington 5, D.C. at \$2.50 a copy.

## Alumina Works Expansion Planned

Plans for a proposed major addition to Aluminum Ore Company's new alumina works at Bauxite, Ark. were announced recently by President Allen B. Williams.

The new facilities would be for manufacture of finished chemical products from alumina processed from bauxite mined in Arkansas.

The plant would be built to help meet defense requirements for vital alumina chemicals. It would also be part of the ore company's long-range plans for meeting anticipated growth in civilian demands for chemicals, Mr. Williams said.

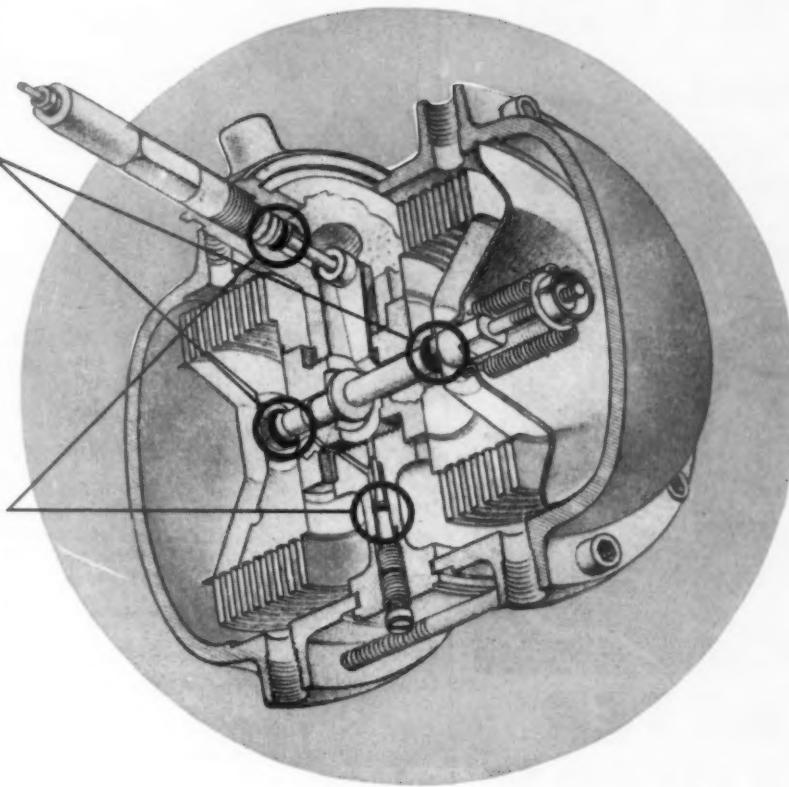
Preliminary estimates place the cost of erecting the new addition in excess of five million dollars. Ultimately, several hundred people would be employed.

Production from the first units built will go to consumers engaged directly in defense work. As new markets develop, additional production capacity will be added to help meet them, Mr. Williams said.

Grading of the land for initial units at the new plant could begin sometime in the spring of 1953, depending on how quickly various government authorizations can be obtained. Actual date for start of production is also contingent upon the authorizations.

**Tight Shut-off here** protects the Barton Flow Meter against pressure overloads up to 4500 psi. LINEAR "O" rings on the valve stem make an extremely simple, compact valve that seats tightly... gets even tighter as pressure increases—impossible with conventional packings.

**Vapor-tight seals here** prevent leaks that would destroy the instrument. Several of the points sealed with LINEAR "O" rings are subject to both rotary and reciprocating motion. Others are simply static seals. LINEAR "O" rings permitted considerably more compact and less expensive construction than conventional packings... and provided complete safety that could not otherwise have been obtained.



## Simple, economical design made possible with Linear "O" Rings



Seal it tight... make it small... keep design simple and economical. These were the requirements that faced the designer of the Barton Flow Meter. Service conditions were tough, too; pressures up to 4500 psi, temperatures from -20 to 200° F. But on every count, LINEAR "O" rings proved the best answer to sealing problems.

As Barton's vice-president, Claude B. Nolte reports, "The LINEAR "O" rings permit a compact and simple construction which would have been difficult to achieve with conventional packings. Without them, the instrument would unquestionably have been more bulky and more expensive to produce."

Perhaps your product, too, can be simplified, reduced in size, or made at lower cost through the use of Linear "O" rings. Write or call LINEAR for full information.



# TEFLON by ETHYLENE

means...



## FASTER DELIVERY

Wherever you are, whatever your Teflon requirements, you fill them quickest from Ethylene Chemical Corporation.

Immediate delivery of standard stock sizes of Teflon rods, sheets, molded and extruded tubing from our plant or from the following distributors:

Abbott & Biddle      Insulating Fabricators  
2413-27 Federal St.      150 Union Avenue  
Philadelphia 46, Pa.      East Rutherford, N.J.

Ray Miller Company      Ray Miller & Co.  
4234 Kanawha Tpke.      1210 Hays Street  
So. Charleston, W. Va.      Houston, Texas

Nelco Industries      Jefferson Sales Corp.  
53 W. Jackson Blvd.      Kingsport, Tenn.  
Chicago 4, Ill.

Pin coupon to your letterhead for a copy of our latest Product & Price List.

-----  
**ETHYLENE CHEMICAL CORP. (Dept. P7)**  
245 Broad Street, Summit, New Jersey

Please mail \_\_\_\_\_ copies of price and size lists to:

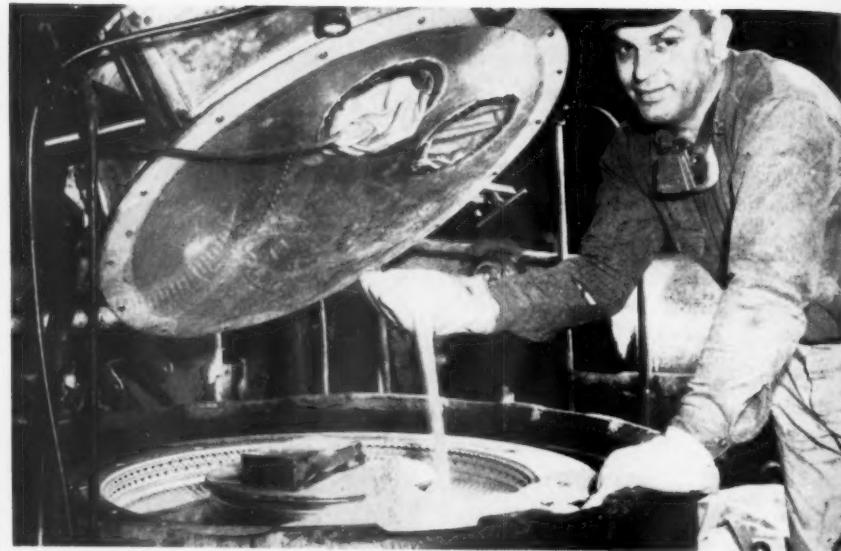
\_\_\_\_\_  
(name and position)

-----  
**ETHYLENE CHEMICAL CORP.**

245 BROAD STREET



SUMMIT, N.J.



**IDEA IN A NUTSHELL:** Growers of English walnuts might get a surprise to see where the shells of their products end up. The Firestone Tire & Rubber Company uses English walnut shells as an efficient cleaner for aluminum tire molds. Finely ground, the shells replace sand and other materials which are likely to pit the aluminum. Firestone buys 125,000 pounds of ground shells a year, doesn't say who gets the meat.

### Business "On Probation" DuPont Official Warns

A new administration in Washington provides American business and industry with "an opportunity" for constructive action but presents, at the same time, heavy national responsibilities, a Du Pont Company executive said recently.

Donald F. Carpenter, general manager of the Du Pont Film Department, told the members of the Manufacturers' Section, Chamber of Commerce of Delaware, that business now hopes to have a government "characterized by integrity and fairness." He warned, however, that business "will be distinctly on probation."

"We will be under minute observation on every side," he said. Business expects no special favors from the new administration, but hopes for fair treatment, "not fairness to the proprietor of a business alone, but fairness to all elements of society, whoever and wherever they may be."

Business makes only one request of the new administration, he said. "Give us equality of opportunity and let us show you what we can do for this glorious country of ours. Let us practice the free enterprise system and let it demonstrate again what miracles it can perform for all Americans. Let us also say, however, that if we are granted this request we will pledge, in turn, not to abuse our opportunity.

"It is now time for us to show our statesmanship. We must not change from the hunted animal to the de-

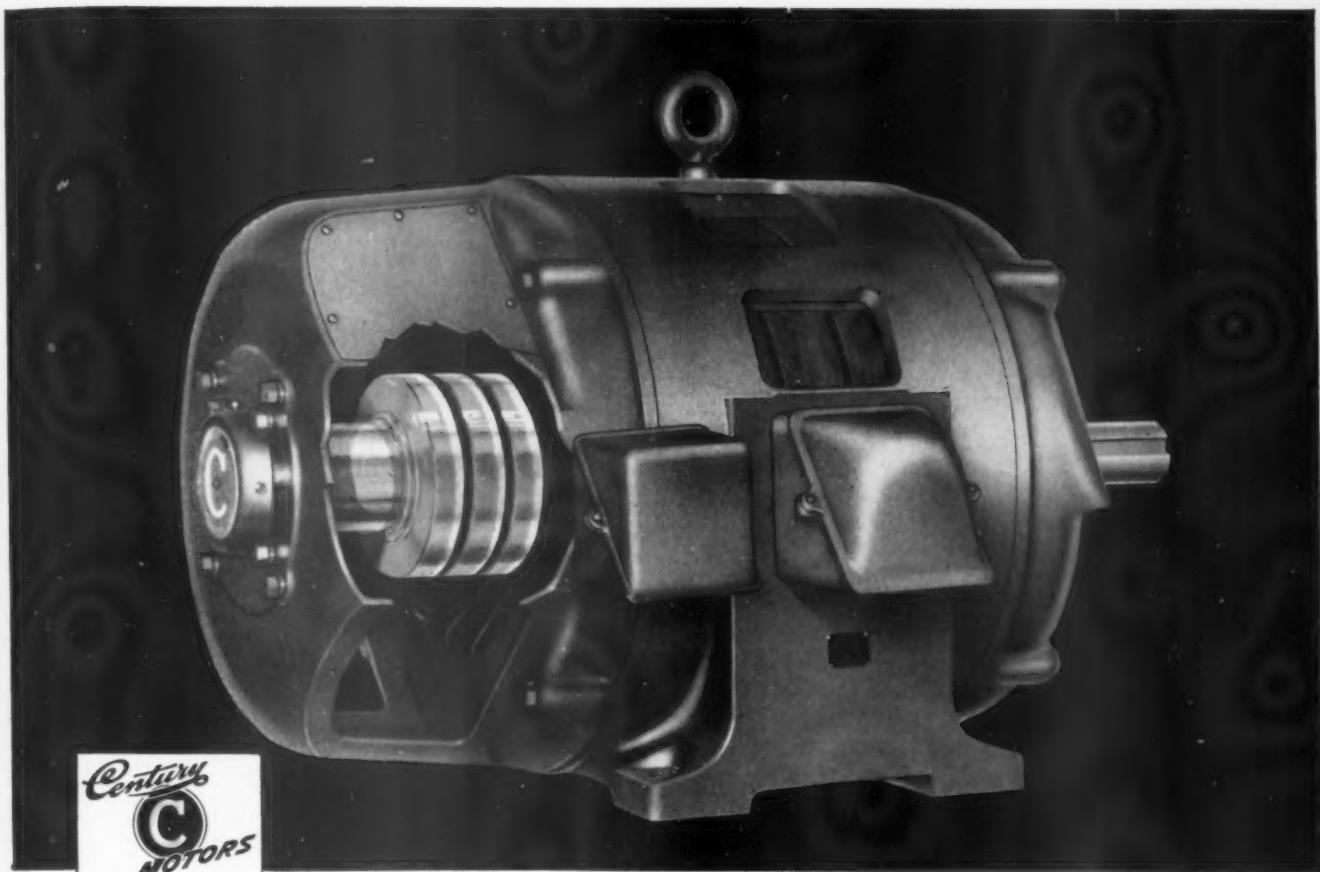
vouring beast—but rather we must emerge from behind the tree confident that we will not be fired upon by the first government agency that spots us. We must quietly, sincerely, and energetically carry on our duties like the true domesticated animal—the beast of burden if you like but the servant of our country."

### U. S. Steel Pours Its One Billionth Ton

United States Steel poured its one billionth ton of steel at Homestead, Pa., appropriately on the eve of America's traditional Thanksgiving. No other company in history and no other nation on earth has ever equalled this production record.

A ceremony at the company's Open Hearth Furnace No. 65 in Homestead District Works commemorated this new chapter in the nation's industrial progress, with top officials of the company attending to lend employees a hand in the historic steel-pouring event.

It took 51 years, 7 months and 25 days and the combined efforts and ingenuity of tens of thousands of men, and women, too, for the corporation's mills to become the first in the history of world steel-making to reach a billion tons. If it were possible to maintain today's greatly-accelerated pace, it would take only 30 years to produce the second billionth ton in the present mills of U. S. Steel, which represent only about one-third of the steel industry in this country.



## perfect contact at high speed

**Through Advanced Casting Techniques,  
We Help Our Customers to Better Serve  
Their Customers.**

Bronze collector rings, like these, are important power transmission factors in electric motors—such as those produced by Century Electric Company, St. Louis, Missouri. Making high speed revolutions with the armature, collector rings must be perfect, as sand inclusions, pits, or other flaws cause arcing, with subsequent loss of motor power.

Century Electric Company, leading manufacturer of quality electric motors, generators, and related equipment, was aware of National Bearing Division's outstanding reputation for quality copper-base castings, using advanced foundry techniques and mass production.

Century was confident we could produce, as specified, flawless bronze collector rings for use in their products.

And their confidence was justified.

Our modern, centrifugal, permanent mold technique enables us to exactly meet Century Electric's specifications. This advanced foundry method eliminates sand molds for castings such as these. The bronze is tough and dense, and rings are cast close to size, minimizing machining. And Century enjoys dollar savings through our production-run economies.

Most important to them, however, is the fact that they are now providing their customers with equipment that includes collector rings of the highest quality.

If your product requires precision-cast bronze or other copper-base components, it will pay you to investigate National Bearing Division. We produce copper-base castings, large or small, with or without machining. And our production-run economies will probably save you money.

Write National Bearing Division for full information and your copy of our catalog.

AMERICAN

**Brake Shoe**

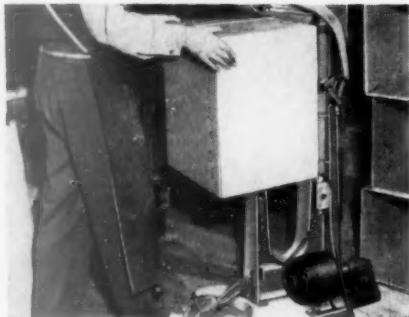
COMPANY

PLANTS IN: ST. LOUIS, MO. • MEADVILLE, PA. • NILES, OHIO • PORTSMOUTH, VA. • ST. PAUL, MINN. • CHICAGO, ILL.

**NATIONAL BEARING DIVISION**

4940 Manchester Avenue • St. Louis 10, Mo.

## BOSTITCH IN YOUR SHIPPING ROOM CRACKS DOWN ON RISING COSTS



**Bostitch Box Bottom Stitchers and Staplers**—Many different machines to fit your exact need—whether it's occasional box bottoming or high-speed, continuous production. There's no storage problem—you make up containers as needed.



**Bostitch Top Stitchers and Staplers** can handle heavily loaded boxes in a variety of sizes. Work table adjusts to container height by manual or automatic control. Combination box and bottom or top and bottom models also available.



**Bostitch Autoclech**—Just touch it to a corrugated container, press the lever and a strong steel stitch seals the spot securely. No need for a blade or anvil, the staple closes itself. Easy to operate. Easy to load. See it demonstrated by your local Bostitch man.



**Bostitch Tackers and Stapling Hammers**—Make quick work of tagging, labeling, and lining wooden boxes. Two to four times as fast as hammer-and-tacks. Special Bostitch T5 fastens tags to corrugated containers by clinching staples inside the board!

*Write for free bulletin which shows how Bostitch shipping-room tools can save time and money for you. Mark and mail the coupon below.*

### BOSTITCH, 721 Mechanic Street, Westerly, R. I.

Please send me a free copy of your bulletin on Bostitch stapling machines for shipping-room use.

I am particularly interested in a better and faster method for:

- |   |   |   |
|---|---|---|
| <input type="checkbox"/> Assembling cartons | <input type="checkbox"/> Sealing corrugated wrappers  | <input type="checkbox"/> Covering barrels |
| <input type="checkbox"/> Bottoming          | <input type="checkbox"/> Repairing cartons for re-use | <input type="checkbox"/> Tagging          |
| <input type="checkbox"/> Top-sealing        | <input type="checkbox"/> Bag-sealing                  | Other _____                               |

Name \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_

Zone \_\_\_\_\_ State \_\_\_\_\_

# BOSTITCH®

AND FASTER  
fastens it better with wire

### Illustrated Guide To Steel Selection Offered

A four-page bulletin covering in condensed form the characteristics, mechanical properties and uses of a comprehensive list of hot rolled and cold finish carbon and alloy steel bars is now available. The bulletin is designed to permit comparisons of the different types to be made quickly and easily. It thus serves a convenient guide to the selection of the most suitable qualities of bar steel for jobs that come up frequently in the average shop. Requests for the bulletin should be made to Joseph T. Ryerson & Son, Inc., Box 8000-A, Chicago 80, Ill.

### 66,000-Kw Steam Turbines Being Built In West

Construction of two 66,000-kilowatt steam turbines, five times as large as any previously built in the west, is underway at the Sunnyvale, Calif. plant of Westinghouse Electric Corporation.

Each of the 31-foot-long, 207-ton turbines will drive a generator capable of supplying the electrical needs of 165,000 homes.

The two 66,000-kw turbines and generators, scheduled for delivery late in 1953 and early 1954, have been ordered for generating stations of the Public Service Company of Oklahoma and the Texas Electric Service Company. Westinghouse is building the generators at East Pittsburgh, Pa. To produce these turbines at Sunnyvale, Westinghouse spent \$500,000 for additional machine tools and other equipment, and \$150,000 to enlarge its test facilities. The largest turbines manufactured previously in the west were 12,500-kw machines.

### Wall Chart Tells What Not To Copy

Federal law forbids the photographic reproduction of a large number of documents. If you're not sure what may be copied, and what may not, you can check on a new illustrated wall chart issued by Peerless Photo Products, Inc., Shoreham, L. I., N. Y., manufacturers of photocopy equipment and supplies. In cases where there is doubt as to the legality of reproduction, a notice on the chart warns photocopiers to seek the advice of an attorney.

# They have

these twelve basic advantages  
and scores of others

## ALCOA



## With them

goes the skill of 64 years'  
experience in fabricating,  
assembling and finishing  
aluminum

## They are

available from your local  
ALCOA sales office,  
distributor or jobber

- Lightweight
- High Resistance to Corrosion
- High Electrical Conductivity
- High Conductivity for Heat
- High Reflectivity for Light and Radiant Heat
- Workability
- Nontoxic
- Strength in Alloys
- Nonsparking
- Nonmagnetic
- Appearance
- High Scrap and Re-Use Value

### ALCOA ALSO MAKES PRODUCTS TO CUSTOMER SPECIFICATION



CASTINGS . . .  
sand, plaster, permanent mold  
and die.



FORGINGS . . .  
drop, hammer and press  
forgings.



SCREW MACHINE  
SPECIALTIES . . .  
special fasteners and screw  
machine parts.



IMPACT EXTRUSIONS



EXTRUDED SHAPES

For all possible co-operation in filling  
your orders, call your local Alcoa sales  
office, distributor or jobber. You'll find  
them listed under "Aluminum" in your  
classified phone book.

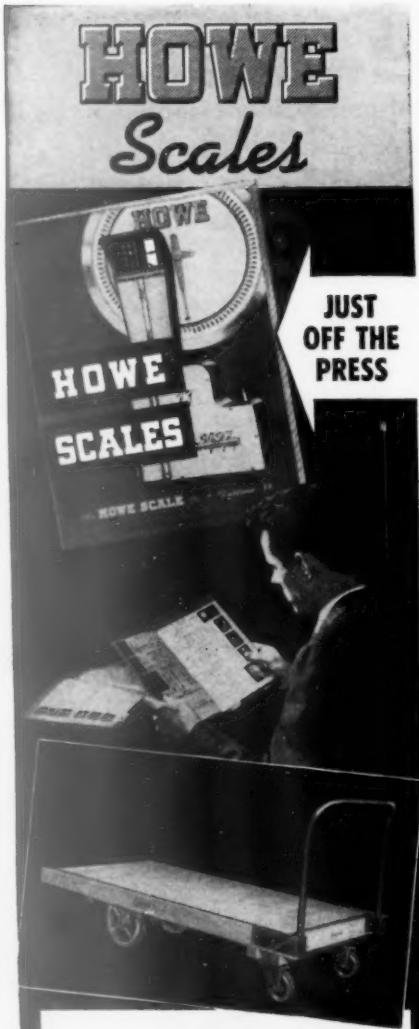
ALUMINUM COMPANY OF AMERICA  
1809A Gulf Bldg. • Pittsburgh 19, Pa.



"SEE IT NOW" with Edward R. Murrow — CBS-TV  
every Sunday . . . brings the world to your armchair.  
Consult your newspaper for local time and channel.

# ALCOA first in ALUMINUM





### Let Us Send You This New Condensed Catalog

The NEW Howe Scale Condensed Catalog showing a complete line of industrial scales and hand trucks is yours for the asking. Includes data on the new Howe Weightograph and the new Howe Tape-Drive Dial Scale line for improved weighing operations. Send for your copy today.

**The HOWE SCALE Co.**  
RUTLAND, VERMONT

Dept. P1, Rutland, Vermont

Please send me:  
HOWE CONDENSED SCALE CATALOG NO. 11   
HOWE HAND TRUCK CATALOG NO. 15-B

Name \_\_\_\_\_  
Title \_\_\_\_\_  
Company \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_

## Survey By National Petroleum Council Places Cost of Synthetic Gasoline at 41c per Gallon

The National Petroleum Council's Committee on Synthetic Liquid Fuels Production Costs recently presented their analysis of the Ebasco Services, Inc., report prepared for the Bureau of Mines, analyzing Bureau hydrogenation cost, figures.

The Council says that statements circulated in April misled the public into believing that Ebasco concluded that industry could finance, build, and operate a coal hydrogenation plant which could give the motorist a synthetic gasoline equal to today's motor fuel in quality and competitive with the present cost at the refinery of about 12 cents per gallon.

To the contrary, the Council pointed out that the Ebasco report in its principal economic conclusion says:

"We do not believe it would be feasible to finance the projects described in the Bureau of Mines Report dated October 25, 1951, with private capital under conditions prevailing at January 1, 1951."

The Council says Ebasco pointed out that to make the venture attractive, a return of about 15 per cent after taxes should be realized. This would result in a gasoline cost of 28 cents per gallon, even after full credit is allowed for the large amount of revenue returned to the operation from the sale of chemicals.

In contrast to this, the Council has

been conducting a half-million dollar survey of synthetic liquid fuels costs which incorporates estimates made by coal industry, finance, housing, and petroleum industry experts. This survey placed the actual manufacturing cost at 41 cents per gallon.

However, the Council said, oil men are talking about a true synthetic fuels plant — not a plant where synthetic fuels are a by-product of a chemicals operation. It is largely on this point that the Council and the Bureau of Mines differ in the matter of arriving at a per-gallon cost.

The Council today quoted the Ebasco report as finding that the Bureau of Mines hypothetical plant would derive 53 per cent of its income from the sale of chemicals. The Council emphasized this percentage would be too large, due to overproduction of chemicals when supplying even a moderate percentage of the nation's fuels.

The Council also said today that the Ebasco report actually covered only 25 per cent of the overall investment cost, and that the New York firm was restricted by the Bureau of Mines to using Bureau estimates. At the request of the Bureau, Ebasco did not see the lengthy studies on hydrogenation made by the Council.

### SYNTHETIC MULLITE SUBSTITUTE FOR FOREIGN KYANITE

American industry's dependence upon foreign kyanite, an essential refractory material for linings of high temperature furnaces vital to the defense mobilization program, is being removed rapidly through increased production of synthetic mullite, William A. White, Sr., Director of the Miscellaneous Metals and Minerals Division, National Production Authority Department of Commerce, reports.

The productive capacity of American kyanite and mullite industry now is approximately 46,000 short tons a year, with synthetic mullite accounting for about 18,000 tons, Mr. White said. That represents an increase of about 16,000 tons over the synthetic mullite produced at the start of the defense mobilization program, and production will be increased through expansions being made by the industry.

This synthetic mullite production, plus about 20,000 tons of domestic kyanite mined annually in the United States, Mr. White said, should soon equal total demand for kyanite and mullite by American industry. Self-sufficiency in the supply of this refractory material is to be desired because of the uncertainty of foreign sources of kyanite in the event of a national emergency.

"Synthetic mullite, produced by the sintering method, can be produced at a lower figure than the cost of importation

and calcining of India kyanite," Alexander H. Jeffries, Acting Chief of NPA's Ceramics and Non-Metallic Minerals Branch, declared. "All the materials used in the production of synthetic mullite are readily available, principally from domestic sources.

"The synthetic is produced by fusing or sintering suitable alumina and silica containing materials, such as bauxite, kaolin, low alumina kyanite and other forms of silica. Most of the synthetic mullite is now being produced from bauxite and domestic kyanite with alumina added."

Synthetic mullite is equally as resistant to the destructive action of high temperatures as Indian kyanite when used in lining furnaces for production of metallurgical glass, ceramics and cement, or when used in the manufacture of porcelain and fire boxes of high pressure boilers and in the smelting of iron ore.

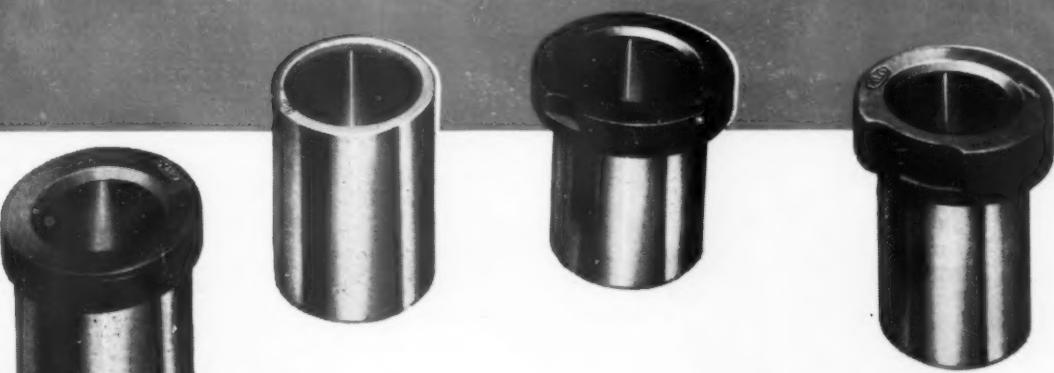
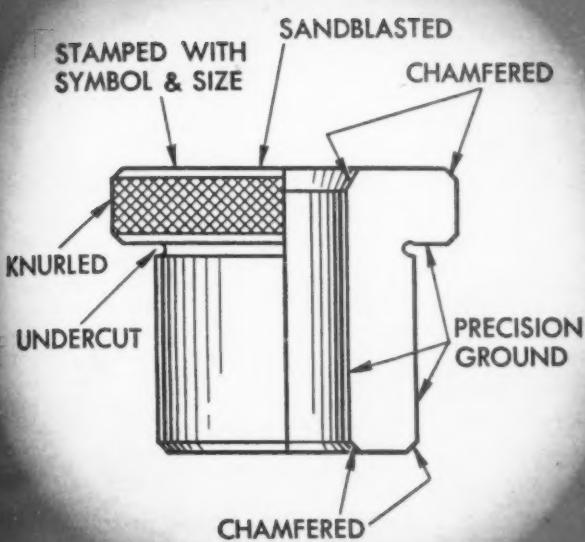
### RECORDER PAPER DEVELOPED BY NAVAL RESEARCH LAB

A new electrochemical recorder paper developed by the Naval Research Laboratory, ONR, has high sensitivity, wide dynamic range and fine recording definition. Good wet strength and stability with respect to shelf-life and to aging are additional characteristics. Benzidine is used as the marking agent. Details are available from Navy Technical News, Office of Information, Navy Department, Washington, D. C.

THE INSIDE  
STORY OF

# EX-CELL-O

## DRILL JIG BUSHINGS



Here are a few good reasons why Ex-Cell-O Drill Jig Bushings last longer and perform better:

1. Premium grade tool steel is selected for wear resistance and heat treated to 62-64 Rockwell "C".
2. Every bushing must measure up to Ex-Cell-O precision standards, as well as to A.S.A. standards.
3. High finish is ground on inside and outside diameters, and under the head for perfect bearing.

Take a tip from the country's largest users of drill jig bushings. Order from the convenient Ex-Cell-O Catalog.

To satisfy the needs of your purchasing and engineering departments be sure to have an adequate supply of Ex-Cell-O Bushing Catalog, Bulletin 35371. Ask for the copies you need.



**EX-CELL-O CORPORATION**  
DETROIT 32, MICHIGAN

MANUFACTURERS OF PRECISION MACHINE TOOLS • CUTTING TOOLS  
RAILROAD PINS AND BUSHINGS • DRILL JIG BUSHINGS • AIRCRAFT  
AND MISCELLANEOUS PRODUCTION PARTS • DAIRY EQUIPMENT

## BUSINESS IN MOTION

*To our Colleagues in American Business ...*

According to the popular conception it is the function of a mill or factory to fill orders, control costs, and maintain quality. However, in the case of Revere the mills in addition serve creatively in close cooperation with Sales, the Technical Advisory Service, and Research. This four-way organization is closely-knit in the common interest of serving the customer.

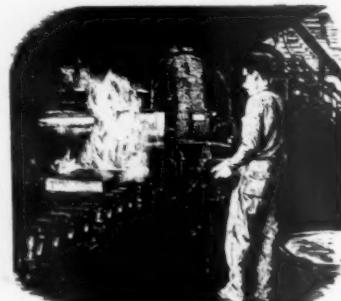
When an order comes to a Revere mill, it is of first concern to the Methods Department, which sets up the mill procedures required to meet customer specifications, thus in effect acting as a representative of the customer. Methods may consult with the T.A., the Laboratory, the Works Manager, and even individual operators.

The long experience of our people is an important factor in customer satisfaction. Pins denoting 20 and 25 years of service are common. Three out of five employees have been with us for 10 years, and one out of four for 20 years or more. At each mill we maintain exhibits of products into which our copper and brass, aluminum and steel tube go, products as diverse as band instruments, automobile radiators and heaters, flatware and hollow ware, furniture, architectural items, refrigerators and air conditioners, valves, and so on. These exhibits are changed frequently, and give our men a personal interest, a feel-

ing that their work in making strip, sheet and plate, tube and pipe, bar and rod, and extruded shapes contributes to better products and better living. Our internal house organ, the "Revere Patriot," carries articles about customers and how they use our metals, and about our distributors and how we help them serve their customers.

So important are the Revere mills and the people who man them that quite often customers visit them to learn about mill operations. And mill personnel in turn go into customer plants. This interchange of information about mill methods on the one hand and customer fabrication processes on the other is extremely valuable. Adjustments on both sides make possible either better customer products or lowered costs, or both.

The mills, in other words, are just as important to Revere customers as Sales, Technical Advisory Service and Research, which in combination give mills and customers the help needed, and in return receive it from them. When we have an order that literally must be handled with gloves and especially wrapped, all the people in the mill take great pains with it, not only out of a sense of pride in a good job, but because they realize that satisfied customers produce the orders that make jobs possible for us all.



### SHELL RECOVERS ELEMENTAL SULFUR FROM WASTE GASES

A unit which will recover up to 55 tons of elemental sulfur daily from waste refinery gases went into operation recently at the Houston Plant of the Shell Chemical Corporation.

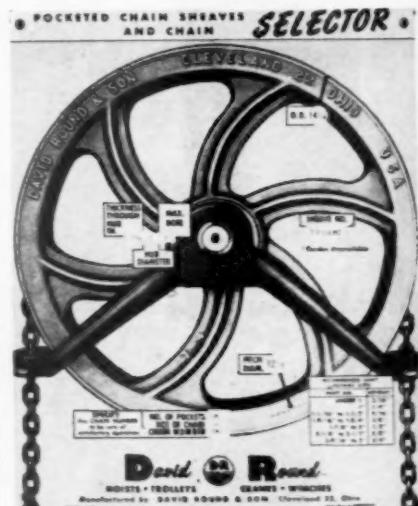
Construction of the plant was a move aimed at alleviating the critical shortage of sulfur and its most important compound, sulfuric acid. Sulfur recovery is not generally a part of petroleum refining operations, but with annual U. S. sulfur production training domestic consumption, the nation's petroleum industry has moved to take up the slack. Over 40 plants for recovery of sulfur from hydrogen sulfide are either planned, under construction or in operation in the U. S. today.

The new sulfur recovery unit was certified by the government as a necessary defense project. In the recovery process hydrogen sulfide as contained in waste refinery gases is catalytically converted to 99½ per cent sulfur at an annual rate in excess of 13,000 tons.

An unusual feature of the unit is that the sulfur will be stored in molten form in an underground tank at a temperature of 300 degrees fahrenheit. It will remain in this state throughout loading and transporting in specially insulated railroad tank cars.



### POCKETED-CHAIN SHEAVES AND CHAIN SELECTOR



New device called a "Selector" designed as a guide in the selection of pocketed chain sheaves and guides, grooved idler sheaves and chain,  $6\frac{1}{2}'' \times 5\frac{1}{4}''$ , both sides of which are utilized in supplying information, is available upon request to David Round & Son, Box 883, Cleveland 2, Ohio. All of the specification data required in ordering these products which are widely used for operation of overhead valves, heavy overhead doors, certain types of power drives and hoisting equipment, are shown in the selector. Engineers will find it a convenient device for selecting sheaves for various applications.

### REVERE COPPER AND BRASS INCORPORATED

Founded by Paul Revere in 1801

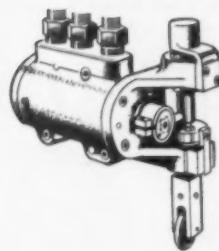
Executive Offices: 230 Park Avenue, New York 17, N. Y.  
SEE REVERE'S "MEET THE PRESS" ON NBC TELEVISION EVERY SUNDAY

*Our Fiftieth Year*  
A START FOR THE FUTURE

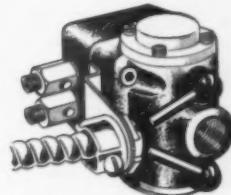


UNBRAKO SOCKET CAP SCREWS have knurled heads for sure grip, fast assembly; accurate hex sockets for positive, internal wrenching; fully formed threads, Class 3 fit.

Made of heat treated alloy steel, with controlled fillet and continuous grain flow, for strength; available in standard sizes from #4 to 1" in a full range of lengths.



USE UNBRAKO SOCKET CAP SCREWS for compact designs to save space, weight and material on machine tools and metalworking equipment.



On electrical and electronic devices, textile machinery and automotive equipment.



On precision instruments, dies, jigs and fixtures, and many other applications too numerous to mention.

## Do you really need a special UNBRAKO screw?

Before you specify a special socket screw, check UNBRAKO Standards. A standard UNBRAKO will do the job as well in most cases—and much cheaper. You'll get better service and faster deliveries, because UNBRAKO socket screw products are stocked by your industrial distributor. Write for UNBRAKO Standards. SPS, Jenkintown 31, Pa.

**UNBRAKO**® SOCKET SCREW DIVISION  
**SPS**  
JENKINTOWN PENNSYLVANIA



Write for UNBRAKO Standards

# Before You Buy Industrial Leathers- GET ALL THE FACTS



"Gentlemen, the Rhoads Data File contains specifications on all Rhoads industrial leather products—Tannate Flat Leather Belting, Tannate Mechanical Leather Packings, Tannate Textile Leathers. Actually, it's a guide to better industrial leathers.

"It explains why Rhoads industrial leathers, which are 'custom-manufactured' from raw hide to finished product, offer long and dependable service. For your free copy, write to

**J. E. RHOADS & SONS  
35 N. Sixth Street, Philadelphia 6, Pa.**

### **Tannate® LEATHER BELTING...**

"Custom-manufactured" from raw hide to finished product, Tannate offers long, dependable performance day after day. Its high coefficient of friction; transmits maximum power over a wide variety of drive conditions.

### **Tannate® LEATHER PACKINGS...**

These, too, are "custom-manufactured" to meet individual requirements. And because of Rhoads exclusive tanning processes, supplemented with special impregnating materials, they are made to operate over a wide range of pressures, temperatures, and with different mediums.

### **Tannate® TEXTILE LEATHERS...**

These are tough, durable and resilient . . . available as check straps, harness and jack straps, lug straps. Special straps can be made to individual requirements.

**RHOADS**  
**INDUSTRIAL LEATHERS**

PHILADELPHIA • NEW YORK • CHICAGO • ATLANTA

### LAMINATED FIBERGLAS FINISHING TANKS LIGHT IN WEIGHT

The accompanying illustration shows finishing-room tank made of laminated fiberglass, recently introduced by MacDermid Inc., Waterbury 20, Conn. The material is extremely durable, lightweight,



and has high impact resistance. The new tanks, tradenamed Laminex, are highly resistant to chemical attack, are non-conductive, and can withstand freezing or boiling temperatures, according to the maker. They have a smooth, white interior, and walls are reinforced with vertical ribs molded into the tank. The top rail is of one-inch diameter pipe covered with molded fabric.

◆ ◆ ◆

### COPPER IN FRONT LINE OF NATIONAL DEFENSE

One of the many ways that copper serves vital purposes in national defense is to improve the effectiveness of ammunition and to reduce wear in precision rifling of gun barrels. Copper is used on projectiles for guns ranging in calibre from twenty millimeters to sixteen inches. Copper reduces wear on rifling, keeps the explosive punch behind the projectile, increases velocity and range.

Improvements in ammunition stem from the use of copper "rotating bands" now used on steel projectiles. The copper bands fit into grooves on the projectile and help center it in the gun barrel. When the gun is fired, the bands provide a piston ring-seal to prevent escape of explosive powder gases. They also serve as a soft bearing surface for the projectile as it passes through the gun barrel and receives its spin. The result is increased velocity, longer range.

Copper "rotating bands" weigh from one tenth of a pound to more than eighty pounds. They have diameters ranging from that of a wedding ring to hatband-size. The attached photograph shows projectiles with and without copper "rotating bands" and a range of band sizes made by Chase Brass and Copper Co., a subsidiary of Kennecott Copper Corp.

Much copper formerly fabricated into peace time products, including roofing, gutters, downspouts, flashing and copper water tube, now goes into copper "rotating bands". After cutting and machining copper tube to correct length for each band size, bands are deburred and cleaned with a solution that removes all traces of grease and oxidation. Finished bands are given a 100% test to assure uniform wall thicknesses and depth for each band size.

*You save money  
on Paint...*



*You save money  
on Labor...*

*When you Paint  
with* 

When you look at the price tag of a gallon of Barreled Sunlight you well might wonder how Barreled Sunlight could cut your maintenance painting costs. But when you look at the facts . . . facts based on performance . . . you begin to see the light.

We admit, Barreled Sunlight might cost a few pennies more per gallon than many other good paints. But it takes more thinner . . . much more . . . as much as 1 gallon of thinner for every 5 gallons of Barreled Sunlight. You save money by buying less paint.

And of far greater importance, with Barreled Sunlight you save money on *labor*, which is the big 80% factor of your maintenance painting costs. Barreled Sunlight goes on faster. It has greater spreading capacity, better hiding power. It gives you a better looking, longer lasting job in less time and for less cost than any other paint on the market.

Write and our representative will show positive proof with his simple on-the-wall test.



**Get Your Free Copy**

**NOW!** For full information on all Barreled Sunlight Maintenance Finishes . . . as well as Barreled Sunlight's new and advanced Engineered Color Plan . . . write today on your company letter-head for this new Barreled Sunlight Catalog. No charge. No obligation.

**BARRELED SUNLIGHT PAINT COMPANY**  
18-A Dudley St., Providence, R. I.

**Barreled Sunlight**  
**Paints** ®

In whitest white or clean, clear, wanted colors,  
there's a Barreled Sunlight Paint for every job

For over half a century those who know the best in paints . . . for all types of buildings . . . have strongly insisted on famous Barreled Sunlight

The  
rubber ball  
that  
wouldn't  
bounce . . .

**There's more to rubber than bounce!** Rubber parts, therefore, must be specifically engineered to meet the requirements of their intended applications. In addition to elasticity, many special properties are essential for dependable performance. These include resistance to extreme temperatures or weather conditions, the ability to withstand oils and other petroleum derivatives, resistance to various chemicals, and long life despite abrasive actions encountered in many applications.

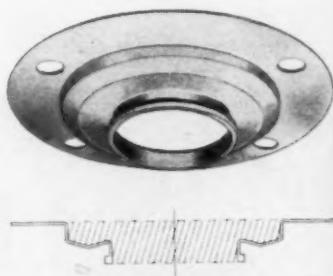
**STALWART RUBBER** specialists can fabricate custom shapes from stocks compounded to meet specific job requirements. These shapes can be molded, extruded, die-cut, lathe-cut or mandrel-built to meet individual, S.A.E. or A.S.T.M. specifications.

Write today for  
**CATALOG 51SR-1**  
for complete  
information.



**INTRICATE TEFLON PARTS  
NOW COMPRESSION MOLDED**

The accompanying illustration shows pump diaphragm used in aircraft application for the handling of fluids, compression molded in Teflon-tetrafluoroethylene resin—by the Plastics Division of the Sparta Heat-Treat Company, East Sparta, Ohio. Heretofore



simple parts could be molded in Teflon, but according to the Sparta Company anything in the way of intricate parts involving undercuts and other difficult forming details seemed impossible to mold. The difficulty was overcome previously by making simple extrusions and then finishing the part by machining, a process that is now unnecessary. The deep undercut in the part illustrated is an example of what can now be achieved in molded parts.

**TEST TV ROLE IN  
RAILROAD OPERATION**

New uses of television which may save time, money and wear and tear on both rolling stock and personnel were explored recently in tests conducted by the B. & O. Railroad and the RCA Victor Division of RCA at the B. & O.'s Barr Yard in Chicago. Three of RCA's newly developed Vidicon industrial TV systems were used to enable personnel in sheltered fixed locations to perform functions normally requiring extra movement by freight cars and walking by employees over considerable distances. Instead of walking among trains and over tracks to list car numbers on an incoming train, for use in switching in train makeup, a checker sat before a television screen and listed the numbers as cars passed before a small camera. Similarly, supervisors in a single location were enabled to observe on the screens of two TV receivers, the disposition and movement of all cars and switching engines in the big classification yard. The views were picked up by two of the new small TV cameras mounted atop the yardmaster's tower on rotating basis controlled at the receiver location.

The object of the experiment was to determine whether industrial television will be able to contribute to greater efficiency not only in railroad yards, but at large marine-railroad terminals such as the B&O has at Baltimore, at coal mine tipples, ore piers, and in other industrial operations.

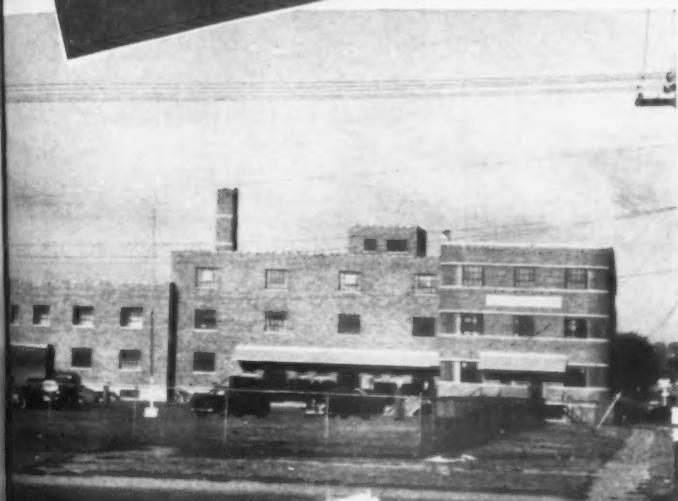
967 SR

**STALWART RUBBER COMPANY**  
200 Northfield Road • Bedford, Ohio

Now more  
important than  
ever to you...



Fast **LOCAL** delivery



Convenient **LOCAL** warehouses



On-the-spot **LOCAL**  
lubrication engineering

**Standard's**

**LOCAL**

**Lubrication service**

• Wherever you are located in the Midwest, there's a Standard service-supply center close at hand. That means prompt delivery of Standard products, immediate assistance from a Standard lubrication specialist.

There's no need to worry over possible production delays due to lack of the right cutting oil, lubricant, or fuel . . . no need to stock-pile these supplies in your

own plant . . . no need to wait for help in solving your lubrication problems.

To take advantage of Standard's time-saving local lubrication service (now more important than ever to you) call the Standard office in your area. Or write: (Ind.), 910 South Michigan Avenue,

Chicago 80, Ill.

**STANDARD OIL COMPANY**



(INDIANA)

more than **80** Oakite cleaning materials

**80** to help speed  
your production

## Short of Skilled Help?

Here's one way to solve one of your toughest problems! On all your production and maintenance cleaning operations—call in your local Oakite Technical Service Representative. His skilled in-plant assistance will help show you the way to speed up such jobs as:

- Tank cleaning
- Machine cleaning
- Electrocleaning steel
- Electrocleaning nonferrous metals
- Pre-paint treatment in machines
- Pre-paint treatment in tanks and by hand
- Steam-detergent cleaning
- Barrel cleaning
- Burnishing
- Better cleaning in hard water areas
- Paint stripping
- Pickling, deoxidizing, bright dipping
- Treating wash water in paint spray booths
- Rust prevention
- Coolants and lubricants for machining and grinding

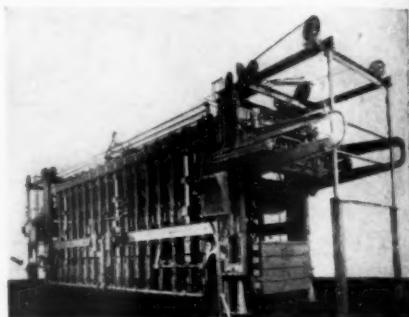
## D. O. Subcontractors!

**FREE** Send for interesting booklet "Some Good Things to Know About Metal Cleaning." Oakite Products, Inc.,  
54 Rector Street, New York 6, N. Y. No obligation.



### HUGE PRESS VULCANIZES BELTS UP TO 72" WIDE

The large, complex construction illustrated is a conveyor belt press, the world's largest, being installed in Good-year Tire & Rubber Company's flat belt production lines at Akron. The 41-foot long press uses up two floor levels and plant buildings had to be revised for its installation. It is more than 80" wide and is capable of vulcanizing conveyor



belt up to 72" wide. The press weighs approximately 600,000 lbs., and it is arranged with equipment at each end to enable it to take up a 20-ton belt. Equipment allows 1,500 lbs. of working pressure on each of the 32 eighteen-inch diameter rams which in turn give 275 pounds per square inch pressure on press plates.

• • •

### GRATUITIES TO PURCHASING PERSONNEL SUBJECT OF CHEMICAL CORPS LETTER

Colonel C. Searle, Commanding Officer, Chicago Chemical Procurement District, Chemical Corps, U. S. Army, recently sent to contractors, the following letter in regard to the acceptance of favors or gratuities by Army Procurement personnel:

"No doubt is has been brought to your attention that Army procurement personnel have been instructed by regulation not to take part in any activities or accept gratuities which might in any way be construed to influence or hamper the full and proper discharge of their official duties. The purpose of this policy is to emphasize that all Army procurement transactions are to be governed by the highest standards of ethical conduct.

"Your organization can be of great help to the Chemical Corps in carrying out this policy if you will acquaint all your representatives with the intent of this regulation, and explain to them that it is designed to protect both contractors and Chemical Corps procurement personnel from any actions or appearances which might be construed as having improperly influenced decisions on procurement matters.

"In this connection, you are no doubt aware of the "Gratuities Clause" contained in government contracts. This clause provides that the government may terminate any contract with a company whose officials or agents offer

(Please turn to page 228)



## 7 SOUND REASONS WHY TRENTWELD IS BETTER

1. TRENTWELD large diameter (4" to 40") Stainless Tubing is precision-finished.
2. TRENTWELD large diameter Stainless Tubing is made in a tube mill by tube specialists.
3. Tested cold rolled sheets are completely fused into finished tubing without added rod metal.
4. No zone of weakness for corrosion to attack.
5. Uniform section, metallurgically correct.
6. Available for fabrication with your fittings, whether welded, van stone or clamp type.
7. All finishes available.

*in  
large  
diameter  
stainless  
steel  
tubing...*

**TREND to TRENTWELD**

There is a strong trend to TRENTWELD in Large Diameter (4" to 40") Stainless Tubing and the reasons are sound. Fabricators, designers, manufacturers of *all* processing equipment find their most rigid specifications fully met by TRENTWELD.

Further, there is more than top quality tubing in an association with TRENT. You gain engineering experience that is both broad and deep. You gain specific help in putting stainless tubing to work in your own application. Write for more data, and tell us about the particular applications you are working on right now.

**TRENTWELD**

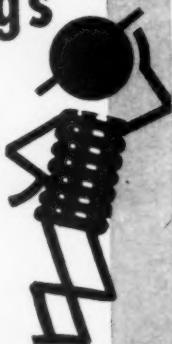
**STAINLESS STEEL TUBING**

TRENT TUBE COMPANY, GENERAL SALES OFFICES, EAST TROY, WISCONSIN (Subsidiary of CRUCIBLE STEEL COMPANY OF AMERICA)

# Studying

## over

## springs



## We can help!



Our specialists can help with your design and experimental work . . . make a few springs for tryout. Then we'll produce your perfect springs on fast, automatic equipment for low cost, volume production. Specifications already established? Then we'll make them for you economically, dependably — to exact specifications. Your inquiries invited.

ILLINOIS  
COIL  
SPRING  
COMPANY

Telephone NAtional 2-8100  
2100 N. Major Ave., Chicago 39, Ill.

## Combustion and How to Control it

Combustion has been defined as rapid oxidation accompanied by the evolution of heat and light, says the National Board of Fire Underwriters in Bulletin No. 36, F.P.File M32.

Although under special conditions burning may take place in an atmosphere of chlorine or some other gases, for most purposes combustion is the result of rapid combination of oxygen with the material which is burning. Fire can take place only where oxygen or other oxidizing agent, fuel, and a sufficient temperature to maintain combustion are present. Removal of any one of these factors will result in the extinguishment of the fire.

Oxygen for most combustion is obtained from the atmosphere, which contains approximately 21% oxygen, 79% nitrogen, and traces of other gases. Some materials, however, contain enough oxygen in readily available form to burn even though atmospheric oxygen is not present. Gunpowder and cellulose nitrate or pyroxylin are two products which fall into this category.

Some materials, including many nitrates, chlorates, and peroxides, do not themselves burn, but when heated liberate oxygen. When mixed with combustible materials and involved in fire, such oxidizing materials promote vigorous burning.

Fuels may be in a gaseous, liquid, or solid form, but combustion usually occurs when the fuel is in a vapor state. Solid or liquid fuels are generally vaporized or decomposed by heat before the reaction with oxygen takes place, although direct combination of a solid fuel with oxygen is possible. Such is the case when glowing charcoal burns without visible flame; the solid carbon reacts directly with the oxygen of the air.

### Compounds of Carbon and Hydrogen

Most ordinary combustibles are compounds of carbon and hydrogen and, in addition, often contain mineral matter and some oxygen. When complete, free burning in air takes place, the carbon reacts with oxygen to form carbon dioxide, the hydrogen combines to form water vapor, and the mineral matter remains behind as the ash. When the oxygen supply is limited, only partial combustion takes place and toxic carbon monoxide is formed instead of the dioxide. Incomplete burning and destructive distillation of ordinary combustibles may also produce hydrogen, methane, soot, and a variety of other compounds.

Oxidation of many materials takes place slowly at room temperatures, but most substances must be heated before the oxidation proceeds at a rate sufficiently high for combustion to take place.

The temperature at which ignition will take place depends on the particular combustible material and the length of time it is exposed to the heat. White phosphorous will burst into flame in a few moments if exposed to air at normal

room temperatures; carbon disulfide, a dangerous flammable liquid, will ignite if spilled on a hot steam radiator. Most ordinary combustibles ignite within a short time when exposed to temperature of 400 to 750 F. Wood normally must be heated to about 750 F. before it ignites, but if exposed to a temperature of 350 to 400 F. for a period of half an hour it will produce gases which are easily ignited in the presence of sufficient air.

Ease of ignition depends not only on the composition of the material but also on its physical characteristics. Small pieces of combustible material heat up much more readily than large ones. This explains why sawdust and shavings are readily ignited by a match or spark while bulky materials are more difficult to start burning.

If a fire in ordinary combustibles burns in a closed room, the oxygen will gradually be used up and the fire will decrease in intensity. Eventually, if no additional oxygen is supplied, the fire will burn itself out. When a limited supply of oxygen is present, however, the fire will continue to burn weakly or to smolder. As it does, the heat decomposes the fuel, giving off flammable gases which only partially burn since enough oxygen for complete combustion is not available. Gradually the room fills with flammable gases and the contents become highly heated. If then, air is allowed to rush into this space, a flammable mixture is formed and a smoke explosion or back draft results.

### Three Essentials of Combustion

As mentioned before, fires cannot continue if one of the three factors—fuel, heat, or oxygen—is removed. Using foam or carbon dioxide extinguishers or shoveling sand on a fire forms a blanket to keep out the air, so that the fire goes out for lack of oxygen to combine with the fuel. For the same reason, the contents of a drum, can, or tank of flammable liquid offer no fire hazard so long as the container is sealed from the atmosphere.

Cooling of burning material to below its ignition point will extinguish the fire. The most common method of cooling burning material is, of course, by the application of water.

Combustion can also be stopped by removal of the fuel supply. Although difficult to accomplish at most fires, it has been done at fires involving flammable gases and liquids by shutting off the flow of fluid or by plugging a leak. Fires involving light oils leaking from the bottoms of tanks have been successfully extinguished by filling the tanks with water to above the level of the leak thus stopping the flow of fuel to the fire. When gases are burning, the safest method of extinguishment is to shut off the fuel in some manner. If other means are used, the leaking gas may accumulate in sufficient quantity that re-ignition will result in an explosion.

# What's Screwy?

by Phillips



"Oh, he's not so smart. It's just that those Phillips Screws are so easy to drive."

**PERFECTLY MATED!**  
Only Phillips Drivers are perfectly mated to Phillips Screws. Look for the name Phillips on the shank.

**EASE** of driving is only one big advantage. Phillips Screws save time, work and money. They also add structural strength, set up tighter, resist the loosening effect of vibration. And they eliminate driver skids,

damaged parts and split screw heads. The identifying X on the cross-recessed-head identifies the x-tra quality of Phillips Screws instantly. Be sure to state "Phillips" on the specifications.

## PHILLIPS Cross-Recessed-Head SCREWS

X marks the spot...the mark of extra quality

AMERICAN SCREW COMPANY • ATLANTIC SCREW WORKS, INC. • THE BLAKE & JOHNSON CO.  
CENTRAL SCREW COMPANY • CONTINENTAL SCREW COMPANY • THE EAGLE LOCK COMPANY  
ELCO TOOL AND SCREW CORPORATION • GREAT LAKES SCREW CORPORATION • THE H. M. HARPER CO.  
THE LAMSON & SESSIONS COMPANY • NATIONAL LOCK COMPANY  
PHEOLL MANUFACTURING CO. • ROCKFORD SCREW PRODUCTS CO. • SCOVILL MANUFACTURING CO.  
SHAKEPROOF DIV. OF ILLINOIS TOOL WORKS • THE SOUTHBURG HDWE. MFG. COMPANY  
STERLING BOLT COMPANY • STRONGHOLD SCREW PRODUCTS, INC. • WALES-BEECH CORP.

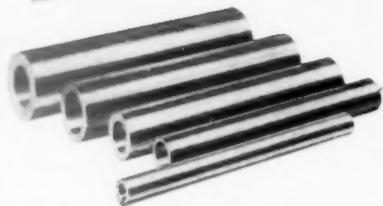


TODAY'S...AND THE FUTURE'S...FINEST FASTENER

**Promet Bars Stand Up  
Where the Going  
Is Tough!**



**CORED & SOLID  
BRONZE BAR STOCK**



Made from Promet No. 6, an outstanding leaded bearing bronze noted for its fine machining properties. Unbelievably great resistance to heat and wear. Will not burn, seize, pound out.

**PROMET'S HIGH SAFETY FACTOR  
IS YOUR INSURANCE AGAINST  
BEARING FAILURE!**

Tougher, harder and stronger, it resists shock loads and withstands high compressive forces and will not cut, or stick to the shaft under ordinary operating conditions. There is no seizing, no scoring—just smooth, quiet operation. Will not powder under the most severe conditions of service. When lubrication fails temporarily, Promet carries on safely until proper lubrication can be restored, affording protection against production shutdowns.

**PROMET FULLY MACHINED  
BARS SAVE YOU TIME, TOOLS  
AND MONEY!**

Completely precision machined inside, outside and on the ends, yet sufficient stock remains for the finishing cut. Can be machined at speeds of more than 500 feet per minute—more than double those of phosphor bronzes. This complete machining insures you against subsurface defects sometimes found in rough cast bars. A considerable amount of metal has already been removed—metal which you would be purchasing if you used rough bars. Every bar is absolutely concentric.

Available round, hexagon and square, in 13-inch lengths, rough cast.

**MONEY-BACK GUARANTEE**  
of longer superior service and lower  
maintenance cost.

**FREE ADVISORY SERVICE**  
Our competent design and engineering  
staff will be glad to assist you in solving  
your special bearing problems.

*Send today for free literature.*

**THE AMERICAN CRUCIBLE PRODUCTS  
COMPANY**

1319 Oberlin Avenue Lorain, Ohio  
Please send free literature on Promet Cored  
and Solid Bronze Bar Stock.

Name .....

Firm .....

Street .....

City & State .....

(Continued from page 224)

or give gratuities to government personnel with a view toward securing or amending such contract, and permits the assessment of additional penalties against the company in such case.

"It is not the intent or purpose of this policy to prevent the participation by Chemical Corps personnel in joint official or semi-official events designed to promote Chemical Corps-Industry harmony and cooperation, nor does it qualify in any way the earnest desire of the Chemical Corps to demonstrate the full cooperation and courtesy which we consider a "must" in our day-to-day contacts with private concerns. On the contrary, it is our intent to guarantee to all businessmen the fair and ethical treatment they deserve.

"I am sure you recognize the merits of this policy, and the sincerity of our efforts to make it effective throughout the Chemical Corps. Your cooperation and the cooperation of all members of your organization to such end will be appreciated."

◆ ◆ ◆  
**USE VINYL PLASTIC TILE  
TO COVER CEMENT WALK**

The accompanying picture shows cement walk leading to office of Vinyl Plastics, Inc., Sheboygan, Wis., which was covered with the company's vinyl plastic tile in July 1948. It is reported that the vinyl plastic floor and wall tiling, the



trade name of which is Vinylast, retains its original brilliance without any sign of deterioration despite sun, rain and ice, and temperatures ranging from -25° F. to over 100° F.

◆ ◆ ◆  
**"ALUMINUM FORMING" MANUAL  
PUBLISHED BY REYNOLDS METALS**

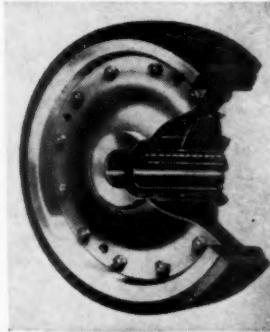
New 148-page technical manual on "Aluminum Forming" which presents a wealth of information on how to draw and form aluminum sheet, plate, tubing and pipe, has been released by Reynolds Metals Company, 2500 South Third St., Louisville, Ky. The manual points out that the most common mistake is the attempt to work and form aluminum by the identical techniques used for other metals. While similar techniques may be employed in some operations, others require special procedures. It is pointed out that selecting the proper grade of aluminum to use for a specific application is of utmost importance.

# Precision Engineered for Top Performance

by



# DARNELL



**OVER 4000 TYPES OF  
CASTERS & WHEELS  
FOR EVERY USE!**

**DARNELL CORP., LTD.  
DOWNEY, (Los Angeles County) CALIF.**

**60 Walker Street, New York 13, N.Y.  
36 North Clinton, Chicago 6, Illinois**

# No Matter What Your Motor Requirements Are!



## Service

No matter where you are located — there is a LOUIS ALLIS sales or service representative within a relatively few hours from you — at present there are approx. 2000 strategically located trained experts to serve you. A telegram or telephone call to the factory — or our local office will bring QUICK efficient service when needed.



## Selection

More than fifty years of designing and building special motors for special applications — plus the creating, developing, and pioneering of many special types of motors for special operating conditions — — give you one of — if not THE largest selection of sizes and types of standard and special motors in the entire industry today. There is a size and type LOUIS ALLIS electric motor for every industrial requirement.



## Creative Engineering

Over a half century of creating and producing highly specialized motors for unusual applications has given our engineering staff a wealth of varied experience — experience that will be invaluable in helping design and create a special motor for YOUR particular special application.



NO MATTER WHAT YOUR MOTOR REQUIREMENTS ARE — YOU CAN DEPEND UPON LOUIS ALLIS —

Your inquiry will receive our most prompt and careful attention.

THE LOUIS ALLIS CO.  
MILWAUKEE 7, WISCONSIN



**Labor cut  
from 2 hours  
to  
10 minutes**

**with**

## Bemis Tite-Fit Tubing!

Maybe you can cut your wrapping labor costs the way this New York City textile company did. After a demonstration of Tite-Fit Tubing—the spiral-sewn burlap shipping tubing with 2-way stretch—the manager said, "Last evening it took two men over two hours, using flat yardage, to hand-sew and steel-strap two units that you have covered in ten minutes."

Now, of course, Tite-Fit Tubing has taken over the job in that plant . . . and labor costs have tumbled. Ask the Bemis Man to demonstrate to you.

*Whatever your needs, we can furnish mixed carloads of burlap piece goods in a wide assortment of widths and weights.*

*Here's more  
good news*

**Prices are down! What's more, you can build long-term plans on Bemis Burlap, because everything points to a long continuation of favorable prices and supply.**

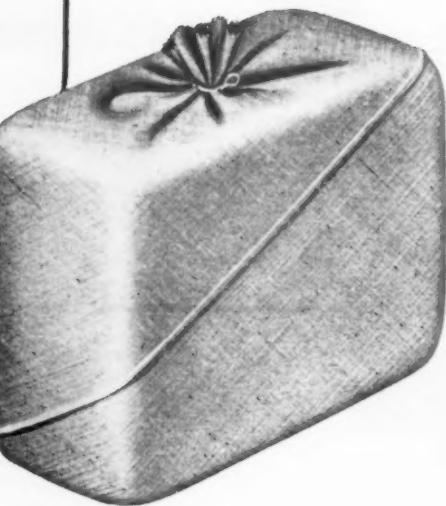
### BURLAP PRICES



# Bemis



General Offices  
St. Louis 2, Mo.



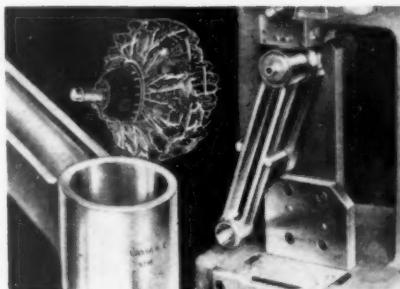
### TRAVELING COLLEGE OF CYLINDER KNOWLEDGE

A fleet of "mobile colleges of cylinder knowledge" has been put on the road by the Miller Motor Co., Melrose Park, Ill., for the purpose of disseminating information on the proper use, maintenance, operation and testing of air and hydraulic cylinders. The fleet units, which are rotated among company representatives so that each man has the use of a unit for weeks at a time, carry exhibits of various types of cylinders



in actual operation. The demonstrations show how to obtain leakproof operation and up to 98% cylinder efficiency, and how to test cylinders before installation. Among the exhibits is one showing an example of dural pressure boosters for saving air, space and weight and increasing efficiency in developing up to 10,000 psi hydraulic output from ordinary plant air, for punching, welding, pressing, crimping, shearing, clamping, riveting and similar applications. Another exhibit shows how air and oil can be used together in one cylinder unit to give smooth, chatter-free movement of hydraulic power from ordinary plant air input.

### SAVE 527 HOURS PER MONTH ON MARKING OPERATION



Special machine, Model 50 PI, developed by The Noble & Westbrook Manufacturing Co., East Hartford 8, Conn., manufacturers of the Roll-O-Mark marking machines, is saving 527 hours per month on a single marking operation, for a leading manufacturer of aircraft engines. The special model is used for marking aircraft engine linkrods, rolling in permanent inscription markings. For the linkrod application illustrated, tolerances on depth of mark were .0005 to .0015. The material test 36 to 40 Rockwell C.

## Could Your "Private Eye" Detect a Difference in BRASS?

There are a lot of good Brass mills, turning out a lot of good Brass. And Bristol Brass is one of these mills, making sheet, rod and wire as good as can be found. But Bristol is not too big to take a personal, follow-through interest in your every order . . . to see that you get what you want when you want it . . . and without sending you any excuses all wrapped up in red tape. *Maybe that's the difference you're looking for.* If it is, then we're ready to take care of you right now, with these modern mills hitting higher production marks than ever before. You'll see that "Bristol-Fashion means Brass at its Best" . . . and service at its fastest. Write!

### The BRISTOL BRASS Corporation

Makers of Brass since 1850 in Bristol, Connecticut.  
Offices or warehouses in Boston, Chicago, Cleveland, Dayton,  
Detroit, Los Angeles, Milwaukee, New York, Philadelphia,  
Pittsburgh, Providence, Rochester.

FOR SKILLED  
PERFORMANCE  
BY  
UNSKILLED  
OPERATORS

INDOORS and OUTDOORS  
YOUR  
**BEST PROTECTION**  
FOR  
FLAMMABLE LIQUID,  
GAS AND ELECTRICAL  
FIRES



Textile Lint Fires

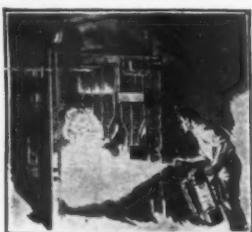


Flammable Liquid Fires

## ANSUL DRY CHEMICAL FIRE EXTINGUISHING EQUIPMENT



Gas Fires

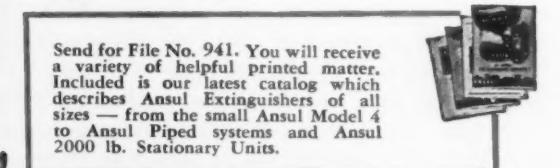


Electrical Fires

- HAND PORTABLES
- WHEELED PORTABLES
- STATIONARY EXTINGUISHERS AND PIPED SYSTEMS
- TRUCK MOUNTS, TRAILERS AND SELF-PROPELLED UNITS



ANSUL MODEL 20-B



Send for File No. 941. You will receive a variety of helpful printed matter. Included is our latest catalog which describes Ansul Extinguishers of all sizes — from the small Ansul Model 4 to Ansul Piped systems and Ansul 2000 lb. Stationary Units.

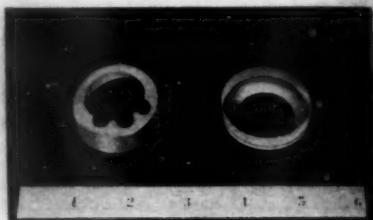


**ANSUL**  
Chemical Company  
FIRE EQUIPMENT DIVISION • MARINETTE, WISCONSIN

OFFICES AND DISTRIBUTORS IN PRINCIPAL CITIES IN THE U. S. A., CANADA AND OTHER COUNTRIES  
ALSO MANUFACTURERS OF INDUSTRIAL CHEMICALS, REFRIGERANTS AND REFRIGERATION PRODUCTS

### NYLON USED FOR DRAWN AND FORMED PARTS

A special drawing grade of nylon strip supplied by The Polymer Corporation of Pennsylvania, Reading, Pa., is being used to draw and form insulating shells for small type servo-motors. Atco Electronics Corp., Brooklyn, N. Y., has perfected a special method of drawing the shells on a production basis. The specific material used is standard FM100 nylon strip, .015 thick by 2" wide.



Insulating shells drawn from nylon strip.

Nylon has been found to have a number of advantages over previous materials in the production of these servoshells:

1. Its toughness permits forming without fracturing. This quality also prevents damage and causes fewer rejects in assembly.
2. It will not support fungus growth and, therefore, needs no further treatment.
3. It meets the specifications for operation at 105°C., required of Class A insulation.
4. It will remain form stable for higher intermittent temperatures, such as those encountered in temporary overload or with hot impregnating compounds.



### FRINGE BENEFITS REPRESENT FIFTH OF INDUSTRIAL PAYROLL

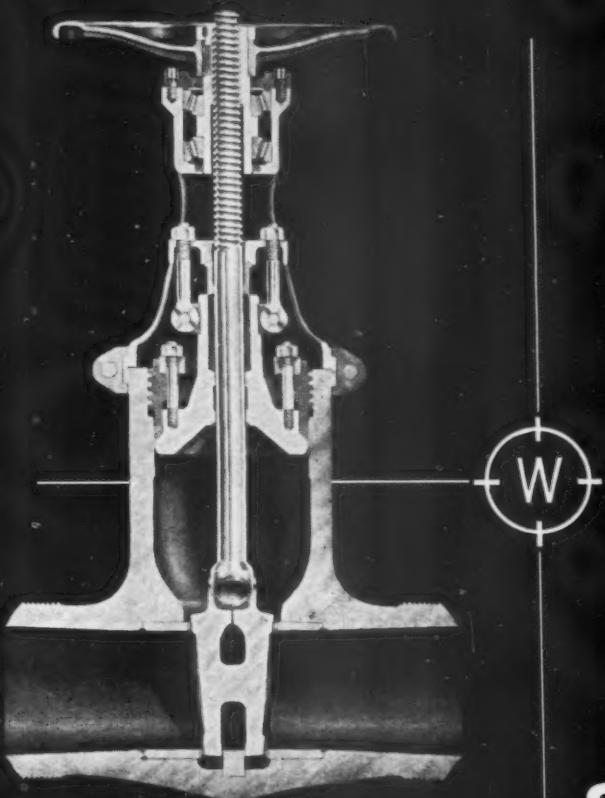
A cross section of American Industry surveyed by the Chamber of Commerce of the United States paid an average of almost one-fifth of its payroll costs in fringe benefits last year, the Chamber reports.

Costs average 31.5 cents per payroll hour and \$644 per employee per year, according to the survey which covered 736 companies. Not only are these fringe benefit costs at an all-time high, but they are mounting steadily the survey shows.

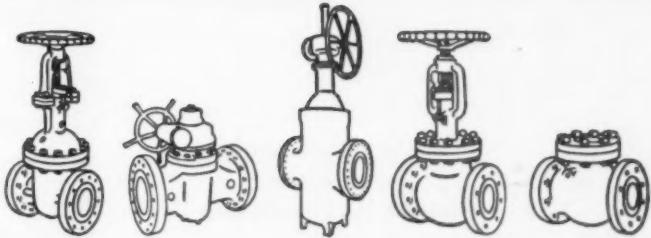
For 138 of the companies which had taken part in two previous surveys, these payments had jumped 66% in four years — from \$410 to \$681 per employee.

Fringe payments during 1951 included: Legally required payments (employer's share only), 3.5% of payroll costs; pension and other agreed-upon payments (employer's share only), 5.4% paid rest periods, lunch periods, etc., 1.9%; payments for time not worked, 6%, and profit-sharing payments, bonuses, etc., 1.9%. Extra pay for night shift and Sunday work or straight production

(Please turn to page 236)



# STEEL



**COMPLETE LINES OF CAST STEEL VALVES AND PIPE FITTINGS** are manufactured by Walworth in a variety of pressure classes, types, sizes, and patterns for general industrial use. Walworth also manufactures cast steel valves for specific service applications.

Walworth produces steel bar stock valves, and cast steel valves made of carbon steel, carbon molybdenum steel, corrosion-resistant, and heat-resistant alloy steels. Included are gate, globe, angle, check, and lubricated plug types. Sizes range from  $\frac{1}{8}$  to 30 inches; pressures range up to 5,000 psi. Full information is contained in Walworth General Catalog 52, a copy of which will be forwarded if requested on business letterhead.

Walworth also manufactures complete lines of valves and fittings made of bronze, iron, and special alloys as well as steel. Walworth-made valves, fittings, and pipe wrenches total approximately 50,000 items.

Walworth engineers will be glad to help you with your problems. For full information, call your local Walworth distributor, nearest Walworth sales office, or write to Walworth Company, General Offices, 60 East 42nd Street, New York 17, New York.

Illustrated in section is an 8-inch Series 900, Walworth Pressure-Seal Cast Steel Gate Valve designed for high-pressure, high-temperature service. Pressure-Seal Valves are available in Series 600, 900, 1500 and 2500; sizes 1 to 16 inches. Small Cast Steel Valves, Series 1500, in angle and Y-globe types, are also available in sizes ranging from  $\frac{1}{4}$  to 2 inches.

# WALWORTH

Manufactured since 1842

valves . . . pipe fittings . . . pipe wrenches

60 East 42nd Street, New York 17, N. Y.

DISTRIBUTORS IN PRINCIPAL CENTERS THROUGHOUT THE WORLD

We gave a "new twist" to the popular BLUE DEVIL

## BLUE DEVIL DIAGONAL KNUURL SOCKET CAP SCREWS

### ENDS FINGER FUMBLING IN HAND ASSEMBLY

Now you can get BLUE DEVIL SOCKET SCREWS with diagonal knurled heads . . . a real time- and work-saver especially designed for hand assembly.

"Diagonal Knurl" means no more delay due to sweat, grease or other similar assembly hazards.

### EASY TO IDENTIFY

"Diagonal Knurl" immediately stamps a socket screw as BLUE DEVIL, made only by Safety Socket Screw Company. It's your guarantee of top quality, precision manufacture and a variety of styles and sizes to meet virtually every fastening requirement!

Sold only through  
authorized  
Industrial Distributors



**SAFETY SOCKET SCREW COMPANY**

6502 Avondale Avenue, Chicago 31, Illinois

(Continued from page 234)  
bonuses are not included in the fringe benefits.

Copies of the survey, entitled Fringe Benefits—1951, are available postpaid from the Economic Research Department, Chamber of Commerce of the United States, Washington 6, D. C., as follows—one to four copies \$1.00 each; 5-49 copies 75¢ each; 50 copies or more 50¢ each.

Most fringe benefits are voluntary, only such benefits as unemployment and workmen's compensation, old-age and survivors' insurance and off-the-job disability insurance (in effect in four states and on the railroads) are required by law.

Dr. Emerson P. Schmidt, the Chamber's director of economic information noted that the United States Treasury now is studying fringe benefits as a possible new source of income tax.

### WORLD BASIC MATERIAL EXPOSITION TO BE HELD IN NEW YORK

An international exposition, first of its kind held anywhere, planned to meet the needs of industrial "worlds of tomorrow" by presenting under one roof the whole range of new materials flowing from the laboratories of industry, was recently announced by Clapp & Poliak, Inc. New York.

Called "Exposition of Basic Materials for Industry," and described as "a new link in our industrial communications system" by Don G. Mitchell, president Sylvania Electric Products, Inc., who is chairman of the board of sponsors, the show will be held in New York at Grand Central Palace, June 15 to 19, 1953. Top executives of 20 major companies are included in the sponsoring board.

A series of technical conferences will be held simultaneously with the exposition to discuss the properties and potentialities of the new materials, new uses of old materials, new forms, and potential developments in materials and methods. Among other things, the exposition will demonstrate new uses for standard products, such as wood, metals, alloys, plastics, ceramics, textiles, leather, rubber, cork and glass.

### INDUSTRY INTENSIFIES SALES TRAINING PROGRAMS

Intensification of sales training and modification of training programs rank high among management's methods of meeting changing sales needs—according to the key 120 executives polled in the latest monthly survey of business practices conducted by the National Industrial Conference Board.

Inauguration of programs, lengthened training periods, closer field observation of new salesmen, and the development of improved training materials are the changes most commonly reported.

In addition to more intensive training for new salesmen, training programs are being extended "to include experienced (Please turn to page 238)



G-E CHEMICAL PROGRESS HELPS ALL INDUSTRY

### Amazing properties of latest General Electric silicones help keep things moving in the transportation industry

Where the scorching desert sun transforms automotive finishes into virtual "hot plates," G-E silicones in waxes and polishes protect the life and color of the paint. These, and other, G-E silicone products maintain their properties despite extreme heat or cold.

In all areas of the transportation field, automotive, aviation, railroad, and marine—and in many other industries—G-E silicone rubber, silicone fluids, and silicone resins have proven indispensable for many applications.

These are just some of the products of G-E *chemical research*—research that serves all industry. Just mail the coupon for a copy of "The Silicone Story"; or for more details on any G-E chemical development, write: *General Electric Company, Chemical Division, Section 100-4C, Pittsfield, Mass.*

PLASTICS COMPOUNDS AND RESINS • SILICONES  
INSULATING MATERIALS • COATING RESINS  
PLASTICS LAMINATING, MOLDING AND EXTRUDING



G-E silicone rubber ducting connects metal tubing which carries hot air to de-icing systems in the F-86 Sabre Jet. High heat-resistance of G-E silicone rubber (to 500 F) provides a safety factor particularly important to aircraft. This rubber also resists extreme cold (-85 F) without cracking.

General Electric Company  
Chemical Division  
Section 300-1E  
Pittsfield, Mass.

Please send me my free copy of *The Silicone Story*.

Name \_\_\_\_\_

Firm \_\_\_\_\_

Street \_\_\_\_\_

City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_

# GENERAL ELECTRIC



For dependable operation of dry chemical fire extinguishers under all conditions, watertight construction is critically important. All Ansul 20-B and 30-B Models are of water-tight construction.

Many thousands of these extin-

guishers have been exposed to all types of adverse weather conditions. Yet, to our knowledge there has been not one case of faulty operation due to entry of water or atmospheric moisture.

SEE PAGE 234

**Standard  
..Specials**

## STEEL WASHERS FOR EVERY NEED

A DEPENDABLE SUPPLIER  
FOR 38 YEARS . . .

Your requirements for standard and special steel washers are sure to be satisfied at Joliet. A bank containing thousands of special dies in many shapes and forms, 9/32" to 8" O.D., gauges No. 28 to 3/8", stands ready to answer your needs. A VARIETY OF FINISHES IS AVAILABLE to meet your special needs, including: Electro-plating, Galvanizing, Parkerizing, and Cyanide hardening.

*After All!*

THERE'S NO SUBSTITUTE  
FOR QUALITY AND SERVICE

Your emergency re-  
quirements are our  
special concern.

203 CONNELL AVE.  
JOLIET, ILLINOIS

**JOLIET**  
WROUGHT  
WASHER CO.

(Continued from page 236)

men and supervisory sales personnel" as well. "Older salesmen are benefiting from an increased number of refresher courses and also by acting as instructors." Growing interest in the planned training of supervisory sales personnel is also reported.

Training programs reported to the Board, however, vary greatly in scope, duration and the emphasis placed upon individual topics. These variations relate "primarily to the amount of product knowledge required and to the nature of the trainee's eventual sales job."

### PATENT POLICIES FOR EMPLOYEES SHOW LITTLE UNANIMITY

Little unanimity of practice regarding patent policies for employees is reported by the National Industrial Conference Board. Surveying company practices on patents in 48 major corporations, the Board notes that initial agreement forms differ widely in wording, coverage and scope.

Forty-three of the forty-eight companies surveyed require some or all of their employees to sign a patent assignment agreement as a condition of employment. Of the five companies which have no such agreement with their employees, two explain that while no formal written agreement exists, there is an understanding that inventions made during the course of employment on company time or in which the company has an interest shall be assigned to the company.

Technical (research and engineering) employees, it is pointed out, are generally called on to sign patent agreements "since they are by far the most likely to make patentable inventions of interest to the company." All of the forty-three firms that have agreements require that such personnel sign.

In nineteen of the forty-three companies, executives and supervisors sign the agreement; eleven companies cover service and sales employees; one covers production employees. Ten companies require all their employees to sign.

Eleven companies which include "other employees" among those who sign patent agreements list accountants, draftsmen, shop methods men, and patent attorneys. Seven of these companies do not specify the employee categories, but indicate that any employee whose work "might lead" to inventions is asked to sign a patent agreement.

#### Compensation for Patents

Many employees who invent are hired specifically to make some improvements, and are financed through many failures and unprofitable undertakings. They are provided with laboratories and facilities for experimentation, and at the same time compensated throughout their research. Since many inventions of the research laboratory represent the work of many highly trained people, rather than a single inventor, the employer may feel that to choose one person for

(Please turn to page 240)



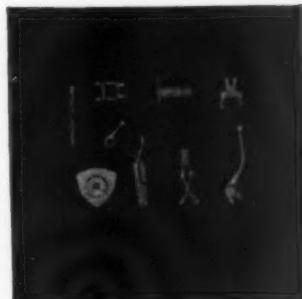
## Accumet Precision Castings for all industrial uses

With Accumet Precision Castings, Crucible has developed a process of producing precision investment castings in intricate designs with the smooth, satiny finish and closely-held dimensions characteristic of "lost wax" castings. Casting tolerances

start at plus or minus 0.005" although under certain circumstances closer tolerances can be held. This relatively new metal forming process solves many difficult problems in design, tooling and production of metal components.

### **fuel injectors from precision castings**

Fuel injectors and carburetors for aircraft are mechanisms containing a variety of peculiarly shaped component parts. The usual procedure is to use hardenable, chrome stainless steels, Types 416 and 440F, which are most adaptable to easy machining. However, to save costs in machining from bars, stocks and forgings, Crucible applied Accumet Precision Castings. The close size control and good surface finish of the castings eliminate many costly machining operations — saving manpower, machine time and tooling expense.



### **more information available on castings**

Long a leader in the development of precision investment castings, Crucible offers you the services of an alert metallurgical staff to help you profitably apply these specialty steels to your operation. Write

us for more detailed information. CRUCIBLE STEEL COMPANY OF AMERICA, General Sales and Operating Offices, Oliver Building, P. O. Box 88, Pittsburgh 30, Pennsylvania.

**CRUCIBLE**

first name in special purpose steels

52 years of **Fine** steelmaking

**PRECISION CASTINGS**

REX HIGH SPEED • TOOL • STAINLESS • ALLOY • MACHINERY • SPECIAL PURPOSE STEELS

# Standout Identification

*at the right price!*



Long experience, skilled craftsmanship, plus the latest and best equipment enable us to produce high quality metal plates for no more than you may pay for inferior identification. A sparkling metal plate spotlights your product, reflects quality and lends distinction. You're assured of lasting identification, clearness, and permanent readability with plates produced by Chicago Thrift-Etching Corporation.

#### GET OUR QUOTATION

Send a rough sketch, blueprint or sample, with specifications, for quotation—or write us fully about your requirements in name plates, instruction plates, dials, panels, scales, etc. Here standout identification and enduringly fine appearance costs no more!

#### ALUMINUM ANODIZING

We are equipped to apply this protective coating to aluminum parts and products by the exclusive Alumilite process—in a wide range of attractive colors. Your request for quotation is solicited.

## CHICAGO THRIFT-ETCHING CORPORATION

1555 North Sheffield Ave., Chicago 22, Illinois, Dept. C

Metal Name Plates, Dials and Panels, Etched or Lithographed • Etched Metal Scales, Clock Dials, Trophy Plates, Plaques, Advertising Specialties • Etched Metal Panels for elevator and architectural uses • Coin Banks • Lithographed or Screened Plastic Name Plates or Dials • Aluminum Anodizing by the Alumilite Process.

SUBSIDIARY OF DODGE MANUFACTURING CORPORATION, MISHAWAKA, INDIANA

(Continued from page 238)

additional compensation is not warranted when a meritorious idea reaches fruition.

Employees in twenty-two of the forty-eight companies surveyed are paid compensation in addition to their regular salary in consideration of the patent assignment.

Special award plans are in effect in several companies to stimulate employee-inventors and to give recognition to specially meritorious disclosures.

Other companies make special awards for inventions through bonus plans which recognize outstanding service.

#### SHIELD PERMITS CLOSE APPROACH TO FIRE

A lightweight fire shield, made of glass fiber insulation, has been developed by Gustin-Bacon Manufacturing Company of Kansas City, enabling firefighters to approach within a few feet of a fire with effective protection against radiant heat.



Weighing only 26 pounds, the shield can be carried by one man on the run over ditches or rough ground. At close quarters, the fireman can either direct operations, turn off valves, effect a rescue or even fight the fire himself.

The secret of the shield's heat-stopping power is a blanket of Ultralite glass fiber insulation fitted to a framework of tubing. Working behind such a shield, a fireman has been able to approach within 18 inches of a high pressure gas fire (850 psi from a 6 inch pipe) in comfort and safety.

The user maintains vision through a "peep hole" at eye level. His face is shielded by copper wire that disseminates and dissipates heat. A self sealing opening for a hose nozzle is easily cut through the shield wherever desired.

Ultralite glass fiber insulation, produced by Gustin-Bacon, is highly resilient and will not dent, break or chip. It is impervious to wetting. Two or three-man shields, on wheels, are also available. The manufacturer says they are so light they can be easily lifted over any obstacles.



## There's a man here you ought to know... Your nearby Reynolds Aluminum Distributor

Reynolds is putting forth every effort to ease your aluminum-buying problems. To meet the growing demand for this vital metal, Reynolds Metals Company and other U.S. producers are rapidly expanding production. Reynolds alone will have increased production to 815 million pounds by 1953.

To meet your immediate problems the nearby Reynolds distributor is doing his level best to fill orders from present stocks.

You can also count on his assistance and guidance in selecting temporary alternate materials. He will apply all of his experience and energy to help you out. He is a man you ought to know. Now as always he will give you the kind of service you need and want.

### YOUR REYNOLDS DISTRIBUTOR IS LISTED BELOW

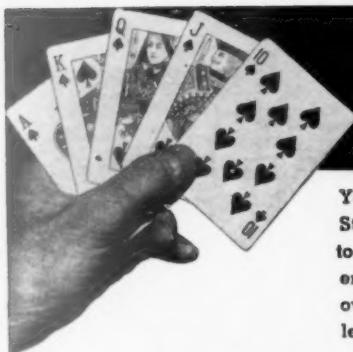
<b>ALABAMA</b>	McDonnell Bros., Inc., (Architectural only) Detroit
Arnold-Brown Metals & Supply Co., Birmingham	Milton A. Meier Co., (Ingot only) Detroit and Grand Rapids
Southern States Iron Roofing Co., Birmingham	
<b>CALIFORNIA</b>	
Clingen & Fortier, Inc., Fresno, San Francisco and Vernon (Ingot also)	Vincent Brass & Copper Co., Minneapolis
Braico Metals, Inc., Los Angeles	MISSOURI
Tay-Holbrook, Inc., San Francisco	Hubbell Metals Inc., North Kansas City and St. Louis
Union Hardware & Metal Co., Los Angeles	Marsh Steel Corporation, North Kansas City
United States Steel Supply Div., Los Angeles	
Western Metal Supply Company, San Diego	
<b>COLORADO</b>	
Marsh Steel Corporation, Colorado Springs and Denver	NEW JERSEY
Salt Lake Hardware Co., Grand Junction	Beth Smelting and Refining Corp., (Ingot only) Newark
<b>CONNECTICUT</b>	Edgcomb Steel Corporation, Hillside
American Steel & Alloys Corp., Hartford	
<b>DISTRICT OF COLUMBIA</b>	
Lyon, Conklin & Co., Inc., Washington	Beth Smelting and Refining Corp., (Ingot only) Newark, N. J.
<b>FLORIDA</b>	J. G. Braun Co., (Architectural only) New York
Horne-Wilson, Inc., Jacksonville, Miami, Orlando and Tampa	Edgcomb Steel Corporation, Hillside, N. J.
Southern States Iron Roofing Co., Jacksonville, Miami, Orlando and Tampa	Rochester Smelting & Refining Co., (Ingot only) Rochester
<b>GEORGIA</b>	
Southern States Iron Roofing Co., Albany, Atlanta, Augusta and Savannah	<b>NORTH CAROLINA</b>
<b>IDAHO</b>	Southern States Iron Roofing Co., Raleigh
Salt Lake Hardware Co., Boise	
<b>ILLINOIS</b>	<b>OHIO</b>
J. G. Braun Co., (Architectural only) Chicago	The Atlas Metal Co., (Ingot only) Cleveland
Sipi Metals Corp., (Ingot only) Chicago	G. A. Avril Smelting Corp., (Ingot only) Cincinnati
United States Steel Supply Div., Chicago	The Hamilton Steel Co., Cleveland
Benjamin Wolff & Co., Chicago	Mutual Manufacturing & Supply Co., Cincinnati
<b>INDIANA</b>	Vory Brothers, Inc., Columbus
Hubbell Metals Inc., Indianapolis	
<b>KENTUCKY</b>	<b>OKLAHOMA</b>
Southern States Iron Roofing Co., Louisville	Vinson Supply Co., Tulsa
<b>LOUISIANA</b>	
Southern States Iron Roofing Co., New Orleans	WEDDING & COMPANY, Coos Bay, Eugene, Medford and Portland
<b>MARYLAND</b>	
Clendenin Bros., Inc., Baltimore	<b>PENNSYLVANIA</b>
Lyon, Conklin & Co., Inc., Baltimore	Athen Steel Service Co., Philadelphia
<b>MASSACHUSETTS</b>	Levinson Steel Sales Company, Pittsburgh
Bay State Refining Co., (Ingot only) Chicopee Falls	Merchant & Evans Co., Philadelphia
Arthur C. Harvey Company, Boston	Potts-Farrington Company, Philadelphia
Pratt & Inman, (Wire, rod, bar, structural) Worcester	
<b>MICHIGAN</b>	
Kaslo Steel Corporation, Detroit	<b>SOUTH CAROLINA</b>
<b>TENNESSEE</b>	Southern States Iron Roofing Co., Columbia
Southern States Iron Roofing Co., Memphis and Nashville	
<b>TEXAS</b>	<b>TENNESSEE</b>
Moncrief-Lenoir Mfg. Co., Dallas, Harlingen, Houston, Lubbock, San Antonio and Temple	Southern States Iron Roofing Co., Memphis and Nashville
Vinson Supply Co., Dallas, Odessa and Snyder	
<b>UTAH</b>	<b>TEXAS</b>
Salt Lake Hardware Co., Salt Lake City	Moncrief-Lenoir Mfg. Co., Dallas, Harlingen, Houston, Lubbock, San Antonio and Temple
<b>VIRGINIA</b>	Vinson Supply Co., Dallas, Odessa and Snyder
Southern States Iron Roofing Co., Richmond	
<b>WASHINGTON</b>	<b>UTAH</b>
Joseph T. Ryerson & Son, Inc., Seattle and Spokane	Salt Lake Hardware Co., Salt Lake City
Clingen & Fortier, Inc., Seattle	
<b>WISCONSIN</b>	<b>VIRGINIA</b>
Benjamin Wolff & Co., Milwaukee	Southern States Iron Roofing Co., Richmond

Look Under "Aluminum"  
in Your Classified  
Telephone Directory



# REYNOLDS ALUMINUM

MODERN DESIGN HAS ALUMINUM IN MIND



You're sure to win with these easy-wheeling Sterling barrows. Why? Because Sterlings are made to outlast any barrow on the market. Sterlings are engineered and built to take hard punishment, over a long period of years. That's why they cost less. Get the facts. Write for Catalog No. 63A.

#### STERLING C5W

Maximum capacity 5 cu. ft., 16 gauge tray, all-welded, no rivets, double lapped at corners. Heavy-duty malleable wheel guard.

**DEALERS:**  
Write for Our Non-Exclusive Selling Plan.

STERLING WHEELBARROW CO., Milwaukee 14, Wis.

**Sterling**  
WHEELBARROWS

Look for this Mark of  
STERLING Quality



Priced  
Right!

## WIRE FORMS

### & Metal Stampings

High-speed, quality production with custom-made precision. Wire formed in any shape for every need.

#### IMMEDIATE CAPACITY FOR DEFENSE SUB-CONTRACTS

#### STRAIGHTENING & CUTTING

Perfect straight lengths to 12 ft.

.0015 to .125 diameter

#### WIRE FORMS

.0015 to .125 diameter

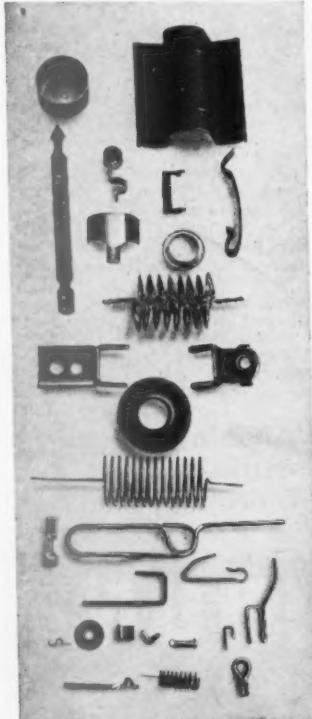
#### SMALL METAL STAMPINGS

.0025 to .035 thickness

.062 to 3 inches wide

Specializing in Production of Parts for Electronic, Cathode Ray Tubes and Transistors

Write for illustrated folder.  
Send Blueprints or Samples for Estimate.



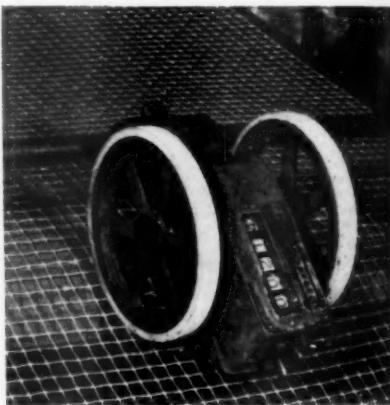
**ART WIRE and STAMPING  
COMPANY**

7 BOYDEN PLACE  
NEWARK 2, N. J.

#### NEW TYPE OF DRAWING MATERIAL MADE OF VINYLITE SHEET

A durable new type of drawing material which is said to facilitate the making and reproduction of engineering drawings, made of Vinylite plastic rigid sheet and bearing the trademark Dinoglass, is produced by the Di-Noc Company, 1700 London Road, Cleveland 12, Ohio. The new sheet is said to be exceptionally stable in dimensions, will not shrink or stretch, is resistant to moisture, oil and grease, alcohol and most chemicals. Finger marks and smudges wipe off with a damp cloth. The sheet lies flat or can be rolled, and resists wrinkling, cracking, fraying and aging. Erasures are easy to make. An entire drawing can be removed from a sheet which can then be reused.

#### ABRASION



Unusual use for nylon is this rim on a Durant counter which measures the length of wire screen as it is packaged for shipment in 100 ft. rolls.

A major producer of woven wire fabric had previously used various kinds of rubber rims. None lasted longer than three weeks, and often wore down earlier under the abrasive action of the screen. Moreover, it was constantly necessary to check the wheel diameter, since even slight wear meant that the customer would get a short length.

The original nylon rims have now been in service for more than seven months with no measurable amount of wear, no replacement, and no contemplated replacement, within the near future. In fact, the rims, made from FM-10001 nylon tubing supplied by The Polymer Corporation of Pennsylvania, Reading, Pa., have worn so well that the maintenance engineer could not say when or if the original nylon would ever need replacement. Additional benefits have been secured through savings in labor and material costs for replacements and through customer satisfaction in obtaining full 100 ft. rolls.

Specifications are as follows: the rim measures 5.73" O. D. x 5-3/16" I. D. x 1/2" long. It is press fitted on the wheel which is machined to a .010" larger diameter than the I.D. of the nylon rim. A straight knurl is also put on the wheel to further hold on the rim.

**NO MATTER WHERE YOU ARE...  
THERE'S A MIDWEST  
DISTRIBUTOR TO SERVE YOU!**

PLATTSBURG  
W. A. Case

ST. JOHNSBURY  
Chas. Millar & Son

MINNEAPOLIS  
Goodin Co.

MILWAUKEE  
Cordes Sup. Co.  
Himelblau, Byfield

ROCKFORD  
Himelblau, Byfield

IOWA CITY  
Plumbers' Supply Co.

DES MOINES  
Iowa Machinery & Sup. Co.

GRAND RAPIDS  
J & L Sup. Co.  
Hayden Sup. Co.

CHICAGO  
Cornell Pipe & Sup. Co.  
Himelblau, Byfield & Co.  
J & L Sup. Co.

HAMMOND  
Himelblau, Byfield & Co.  
South Bend Sup. Co.

SOUTH BEND  
South Bend Sup. Co.

MIDDLETON  
M. J. Gibbons Sup. Co.

EAST ST. LOUIS  
American Rad. & Std. San. Corp.  
Midland Pdg. Sup. Co.

ST. LOUIS  
American Rad. &  
Std. San. Corp.  
The Geigner Pipe & Sup. Co.  
State Pipe & Sup. Co.

LITTLE ROCK  
Himstedt Supply Co.

DORADO  
J & L Sup. Co.

OIL CITY  
J & L Sup. Co.

JACKSON  
Miss. Fdy. & Mach. Co.  
Wholesale Supply Co.

MONROE  
W. J. Riley Sup. Co.

BROOKHAVEN  
J & L Sup. Co.

LAUREL  
J & L Sup. Co.

JUNKIE  
J & L Sup. Co.

HARVEY—J & L Sup. Co.  
HOUMA  
J & L Sup. Co.

NEW ORLEANS  
General Mill Sup. Inc.  
Marine Spec. & Mill Sup. Co.  
Weil-Gutmann Sup. Co.

NASHVILLE  
W. A. Case & Son Mfg. Co.

MEMPHIS  
Central Supply Co.

EVANSVILLE  
Plumbing & Ind. Sup. Co.

BIRMINGHAM  
Pate Supply Co.

TUSCALOOSA  
Cole Supply Co.

MERIDIAN  
Southern Pipe & Sup. Co.

MOBILE  
Marine Specialty Co.

NEW ORLEANS  
General Mill Sup. Inc.  
Marine Spec. & Mill Sup. Co.  
Weil-Gutmann Sup. Co.

JACKSONVILLE  
J. G. Christopher Co.

ROCHESTER  
W. A. Case  
UTICA  
Chas. Millar & Son

NIAGARA FALLS  
W. A. Case

SYRACUSE  
W. A. Case

BUFFALO  
W. A. Case

BINGHAMTON  
W. A. Case  
Chas. Millar & Son

ERIE  
W. A. Case

JAMESTOWN  
W. A. Case

TOLEDO  
W. A. Case  
Coon-DeVisser Co.

CLEVELAND  
Kennedy Co.  
Universal Valve & Flg.

DETROIT  
W. A. Case  
Hardy &  
Dischinger Co.

CANTON  
J & L Sup. Co.

DAYTON  
M. J. Gibbons Sup. Co.

CINCINNATI  
Scallan Sup. Co.

HUNTINGTON  
Foster-Thornburg Hdw. Co.

JOHNSON CITY  
Summers Hdw. & Sup. Co.

KNOXVILLE  
Willis' Pdg. Sup. Co.

ATLANTA  
Fulton Supply Co.

BIRMINGHAM  
Pate Supply Co.

TUSCALOOSA  
Cole Supply Co.

MERIDIAN  
Southern Pipe & Sup. Co.

MOBILE  
Marine Specialty Co.

JACKSONVILLE  
J. G. Christopher Co.

TAMPA  
Knight & Wall Co.

FITCHBURG  
W. A. Case  
SCHENECTADY  
Jennison Co.

TROY  
W. A. Case

ALBANY  
W. A. Case

PITTSFIELD  
W. A. Case

KINGSTON  
W. A. Case

NEWBURGH  
W. A. Case  
W. L. Smith Co.

PASSAIC  
N. J. Eng. & Sup. Co.

NEWARK  
M. B. Garrigan Co.  
Peirce-Trednick

JERSEY CITY—Ideal Sup. Co.

NORRISTOWN  
United Pipe & Sup. Co.

PITTSBURGH  
Chandler-Boyd Co.  
J & L Sup. Co.

CHESTER  
Tomlinson Co.

PHILADELPHIA  
Cyberno Prod. Co.  
B. H. Deacon Co.  
Mory-Buckwalter, Inc.

BALTIMORE  
Central Metals & Supply  
Disco Sup. Co.

RICHMOND  
Tomlinson Co.  
Virginia Mch. & Well Co.

NORFOLK  
R. W. Hudgins & Son  
Tomlinson Co.  
Henry Walk Co.

GREENSBORO  
Tomlinson Co.

DURHAM  
Tomlinson Co.

CHARLOTTE  
Henry Walk Co.

ATLANTA  
Fulton Supply Co.

BIRMINGHAM  
Pate Supply Co.

TUSCALOOSA  
Cole Supply Co.

MERIDIAN  
Southern Pipe & Sup. Co.

MOBILE  
Marine Specialty Co.

JACKSONVILLE  
J. G. Christopher Co.

TAMPA  
Knight & Wall Co.

CHARLOTTE  
Henry Walk Co.

ATLANTA  
Fulton Supply Co.

BIRMINGHAM  
Pate Supply Co.

TUSCALOOSA  
Cole Supply Co.

MERIDIAN  
Southern Pipe & Sup. Co.

MOBILE  
Marine Specialty Co.

JACKSONVILLE  
J. G. Christopher Co.

TAMPA  
Knight & Wall Co.

CHARLOTTE  
Henry Walk Co.

ATLANTA  
Fulton Supply Co.

BIRMINGHAM  
Pate Supply Co.

TUSCALOOSA  
Cole Supply Co.

MERIDIAN  
Southern Pipe & Sup. Co.

MOBILE  
Marine Specialty Co.

JACKSONVILLE  
J. G. Christopher Co.

TAMPA  
Knight & Wall Co.

CHARLOTTE  
Henry Walk Co.

ATLANTA  
Fulton Supply Co.

BIRMINGHAM  
Pate Supply Co.

TUSCALOOSA  
Cole Supply Co.

MERIDIAN  
Southern Pipe & Sup. Co.

MOBILE  
Marine Specialty Co.

JACKSONVILLE  
J. G. Christopher Co.

TAMPA  
Knight & Wall Co.

CHARLOTTE  
Henry Walk Co.

ATLANTA  
Fulton Supply Co.

BIRMINGHAM  
Pate Supply Co.

TUSCALOOSA  
Cole Supply Co.

MERIDIAN  
Southern Pipe & Sup. Co.

MOBILE  
Marine Specialty Co.

JACKSONVILLE  
J. G. Christopher Co.

TAMPA  
Knight & Wall Co.

CHARLOTTE  
Henry Walk Co.

ATLANTA  
Fulton Supply Co.

BIRMINGHAM  
Pate Supply Co.

TUSCALOOSA  
Cole Supply Co.

MERIDIAN  
Southern Pipe & Sup. Co.

MOBILE  
Marine Specialty Co.

JACKSONVILLE  
J. G. Christopher Co.

TAMPA  
Knight & Wall Co.

CHARLOTTE  
Henry Walk Co.

ATLANTA  
Fulton Supply Co.

BIRMINGHAM  
Pate Supply Co.

TUSCALOOSA  
Cole Supply Co.

MERIDIAN  
Southern Pipe & Sup. Co.

MOBILE  
Marine Specialty Co.

JACKSONVILLE  
J. G. Christopher Co.

TAMPA  
Knight & Wall Co.

CHARLOTTE  
Henry Walk Co.

ATLANTA  
Fulton Supply Co.

BIRMINGHAM  
Pate Supply Co.

TUSCALOOSA  
Cole Supply Co.

MERIDIAN  
Southern Pipe & Sup. Co.

MOBILE  
Marine Specialty Co.

JACKSONVILLE  
J. G. Christopher Co.

TAMPA  
Knight & Wall Co.

CHARLOTTE  
Henry Walk Co.

ATLANTA  
Fulton Supply Co.

BIRMINGHAM  
Pate Supply Co.

TUSCALOOSA  
Cole Supply Co.

MERIDIAN  
Southern Pipe & Sup. Co.

MOBILE  
Marine Specialty Co.

JACKSONVILLE  
J. G. Christopher Co.

TAMPA  
Knight & Wall Co.

CHARLOTTE  
Henry Walk Co.

ATLANTA  
Fulton Supply Co.

BIRMINGHAM  
Pate Supply Co.

TUSCALOOSA  
Cole Supply Co.

MERIDIAN  
Southern Pipe & Sup. Co.

MOBILE  
Marine Specialty Co.

JACKSONVILLE  
J. G. Christopher Co.

TAMPA  
Knight & Wall Co.

CHARLOTTE  
Henry Walk Co.

ATLANTA  
Fulton Supply Co.

BIRMINGHAM  
Pate Supply Co.

TUSCALOOSA  
Cole Supply Co.

MERIDIAN  
Southern Pipe & Sup. Co.

MOBILE  
Marine Specialty Co.

JACKSONVILLE  
J. G. Christopher Co.

TAMPA  
Knight & Wall Co.

CHARLOTTE  
Henry Walk Co.

ATLANTA  
Fulton Supply Co.

BIRMINGHAM  
Pate Supply Co.

TUSCALOOSA  
Cole Supply Co.

MERIDIAN  
Southern Pipe & Sup. Co.

MOBILE  
Marine Specialty Co.

JACKSONVILLE  
J. G. Christopher Co.

TAMPA  
Knight & Wall Co.

CHARLOTTE  
Henry Walk Co.

ATLANTA  
Fulton Supply Co.

BIRMINGHAM  
Pate Supply Co.

TUSCALOOSA  
Cole Supply Co.

MERIDIAN  
Southern Pipe & Sup. Co.

MOBILE  
Marine Specialty Co.

JACKSONVILLE  
J. G. Christopher Co.

TAMPA  
Knight & Wall Co.

CHARLOTTE  
Henry Walk Co.

ATLANTA  
Fulton Supply Co.

BIRMINGHAM  
Pate Supply Co.

TUSCALOOSA  
Cole Supply Co.

MERIDIAN  
Southern Pipe & Sup. Co.

MOBILE  
Marine Specialty Co.

JACKSONVILLE  
J. G. Christopher Co.

TAMPA  
Knight & Wall Co.

CHARLOTTE  
Henry Walk Co.

ATLANTA  
Fulton Supply Co.

BIRMINGHAM  
Pate Supply Co.

TUSCALOOSA  
Cole Supply Co.

MERIDIAN  
Southern Pipe & Sup. Co.

MOBILE  
Marine Specialty Co.

JACKSONVILLE  
J. G. Christopher Co.

TAMPA  
Knight & Wall Co.

CHARLOTTE  
Henry Walk Co.

ATLANTA  
Fulton Supply Co.

BIRMINGHAM  
Pate Supply Co.

TUSCALOOSA  
Cole Supply Co.

MERIDIAN  
Southern Pipe & Sup. Co.

MOBILE  
Marine Specialty Co.

JACKSONVILLE  
J. G. Christopher Co.

TAMPA  
Knight & Wall Co.

CHARLOTTE  
Henry Walk Co.

ATLANTA  
Fulton Supply Co.

BIRMINGHAM  
Pate Supply Co.

TUSCALOOSA  
Cole Supply Co.

MERIDIAN  
Southern Pipe & Sup. Co.

MOBILE  
Marine Specialty Co.

JACKSONVILLE  
J. G. Christopher Co.

TAMPA  
Knight & Wall Co.

CHARLOTTE  
Henry Walk Co.

ATLANTA  
Fulton Supply Co.

BIRMINGHAM  
Pate Supply Co.

TUSCALOOSA  
Cole Supply Co.

MERIDIAN  
Southern Pipe & Sup. Co.

MOBILE  
Marine Specialty Co.

JACKSONVILLE  
J. G. Christopher Co.

TAMPA  
Knight & Wall Co.

CHARLOTTE  
Henry Walk Co.

ATLANTA  
Fulton Supply Co.

BIRMINGHAM  
Pate Supply Co.

TUSCALOOSA  
Cole Supply Co.

MERIDIAN  
Southern Pipe & Sup. Co.

MOBILE  
Marine Specialty Co.

JACKSONVILLE  
J. G. Christopher Co.

TAMPA  
Knight & Wall Co.

CHARLOTTE  
Henry Walk Co.

ATLANTA  
Fulton Supply Co.

BIRMINGHAM  
Pate Supply Co.

TUSCALOOSA  
Cole Supply Co.

MERIDIAN  
Southern Pipe & Sup. Co.

MOBILE  
Marine Specialty Co.

JACKSONVILLE  
J. G. Christopher Co.

TAMPA  
Knight & Wall Co.

CHARLOTTE  
Henry Walk Co.

ATLANTA  
Fulton Supply Co.

BIRMINGHAM  
Pate Supply Co.

TUSCALOOSA  
Cole Supply Co.

MERIDIAN  
Southern Pipe & Sup. Co.

MOBILE  
Marine Specialty Co.

JACKSONVILLE



You're sure to win with these easy-wheeling Sterling barrows. Why? Because Sterlings are made to outlast any barrow on the market. Sterlings are engineered and built to take hard punishment over a long period of years. That's why they cost less. Get the facts. Write for Catalog No. 63A.

#### STERLING C5W

Maximum capacity 5 cu. ft. 16 gauge tray, all-welded, no rivets, double lapped at corners. Heavy-duty malleable wheel guard.

**DEALERS:**  
Write for Our Non-Exclusive Selling Plan.

STERLING WHEELBARROW CO., Milwaukee 14, Wis.

**Sterling**  
WHEELBARROWS

Look for this Mark of  
STERLING Quality



Choice of wood handles or tubular steel frame . . . steel wheel or pneumatic tired wheel.

priced  
Right!

## WIRES FORMS & Metal Stampings

High-speed, quality production with custom-made precision. Wire formed in any shape for every need.

#### IMMEDIATE CAPACITY FOR DEFENSE SUB-CONTRACTS

#### STRAIGHTENING & CUTTING

Perfect straight lengths to 12 ft.

.0015 to .125 diameter

#### WIRE FORMS

.0015 to .125 diameter

#### SMALL METAL STAMPINGS

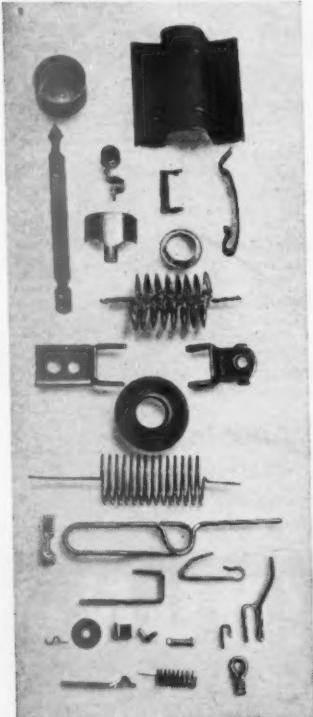
.0025 to .035 thickness

.062 to 3 inches wide

Specializing in Production of Parts for Electronic, Cathode Ray Tubes and Transistors

Write for illustrated folder.

Send Blueprints or Samples for Estimate.



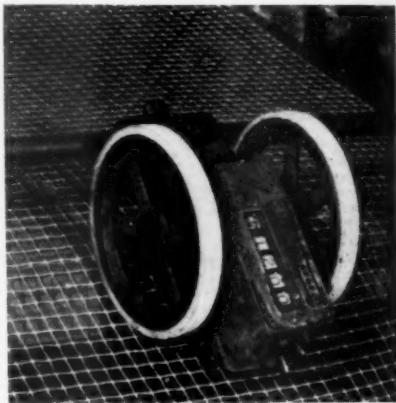
ART WIRE and STAMPING  
COMPANY

7 BOYDEN PLACE  
NEWARK 2, N. J.

#### NEW TYPE OF DRAWING MATERIAL MADE OF VINYLITE SHEET

A durable new type of drawing material which is said to facilitate the making and reproduction of engineering drawings, made of Vinylite plastic rigid sheet and bearing the tradename Dinoglass, is produced by the Di-Noc Company, 1700 London Road, Cleveland 12, Ohio. The new sheet is said to be exceptionally stable in dimensions, will not shrink or stretch, is resistant to moisture, oil and grease, alcohol and most chemicals. Finger marks and smudges wipe off with a damp cloth. The sheet lies flat or can be rolled, and resists wrinkling, cracking, fraying and aging. Erasures are easy to make. An entire drawing can be removed from a sheet which can then be reused.

#### ABRASION



Unusual use for nylon is this rim on a Durant counter which measures the length of wire screen as it is packaged for shipment in 100 ft. rolls.

A major producer of woven wire fabric had previously used various kinds of rubber rims. None lasted longer than three weeks, and often wore down earlier under the abrasive action of the screen. Moreover, it was constantly necessary to check the wheel diameter, since even slight wear meant that the customer would get a short length.

The original nylon rims have now been in service for more than seven months with no measurable amount of wear, no replacement, and no contemplated replacement, within the near future. In fact, the rims, made from FM-10001 nylon tubing supplied by The Polymer Corporation of Pennsylvania, Reading, Pa., have worn so well that the maintenance engineer could not say when or if the original nylon would ever need replacement. Additional benefits have been secured through savings in labor and material costs for replacements and through customer satisfaction in obtaining full 100 ft. rolls.

Specifications are as follows: the rim measures 5.73" O. D. x 5-3/16" I. D. x 1/2" long. It is press fitted on the wheel which is machined to a .010" larger diameter than the I.D. of the nylon rim. A straight knurl is also put on the wheel to further hold on the rim.

**NO MATTER WHERE YOU ARE...  
THERE'S A MIDWEST  
DISTRIBUTOR TO SERVE YOU!**

PLATTSBURG  
W. A. Case

ST. JOHNSBURY  
Chas. Millar & Son

MINNEAPOLIS  
Goodin Co.

MT. PLEASANT  
J & L Sup. Co.

PORT HURON  
Huron Pipe & Sup. Co.

ROCHESTER  
W. A. Case

UTICA  
Chas. Millar & Son

FITCHBURG  
W. A. Case

BOSTON  
Metropolitan Pipe & Sup. Co.

MILWAUKEE  
Cordes Sup. Co.  
Himelblau, Byfield

GRAND RAPIDS  
Hayden Sup. Co.

DETROIT  
W. A. Case  
Coon-DeVisser Co.

TOLEDO  
W. A. Case  
Hardy &  
Dischinger Co.

CLEVELAND  
Kennedy Co.  
Universal Valve & Fig.

JAMESTOWN  
W. A. Case

BINGHAMTON  
W. A. Case  
Chas. Millar & Son

SCHENECTADY  
W. A. Case

TROY  
W. A. Case

GREENFIELD  
—W. A. Case

ROCKFORD  
Himelblau, Byfield

HAMMOND  
Himelblau, Byfield & Co.

CHICAGO  
South Bend Sup. Co.  
Cornell Pipe & Sup. Co.  
J & L Sup. Co.  
Warren Barr Sup. Co.

SOUTH BEND  
South Bend Sup. Co.

YOUNGSTOWN  
Universal Valve & Fig.

PASSAIC  
N. J. Eng. & Sup. Co.  
Peirce-Trednick

NEWARK  
M. B. Garrigan Co.  
Ideal Sup. Co.

NEWBURGH  
W. A. Case  
W. L. Smith Co.

NEW HAVEN  
Perrigo Co.

IOWA CITY  
Plumbers' Supply Co.

DES MOINES  
Iowa Machinery & Sup. Co.

PEORIA  
Himelblau, Byfield

MIDDLETOWN  
M. J. Gibbons Sup. Co.

CANTON  
J & L Sup. Co.

COLUMBUS  
Westwater Sup. Co.

DAYTON  
M. J. Gibbons Sup. Co.

PITTSBURGH  
Chandler-Boyd Co.  
J & L Sup. Co.

CLARKSBURG  
J & L Sup. Co.

RICHMOND  
Tomlinson Co.  
Virginia Mchly & Well Co.

NORFOLK  
R. W. Hudgins & Son  
Tomlinson Co.  
Henry Walk Co.

EAST ST. LOUIS  
American Rad. & Std. San. Corp.  
Midland Pbg. Sup. Co.

MOUNT VERNON  
J & L Sup. Co.

EVANSVILLE  
Plumbing & Ind. Sup. Co.

HUNTINGTON  
Foster-Thornburg Hdw. Co.

JOHNSON CITY  
Summers Hdw. & Sup. Co.

KNOXVILLE  
Willis' Pbg. Sup. Co.

DURHAM  
Tomlinson Co.

CHARLOTTE  
Henry Walk Co.

LITTLE ROCK  
Himstedt Supply Co.

DORADO  
J & L Sup. Co.

OIL CITY  
J & L Sup. Co.

JACKSON  
Miss. Fdy & Mach. Co.  
Wholesale Supply Co.

MONROE  
J. Riley Sup. Co.

BROOKHAVEN  
J & L Sup. Co.

LAUREL  
J & L Sup. Co.

MUNKIE  
J & L Sup. Co.

HARVEY—J & L Sup. Co.

HOUMA  
J & L Sup. Co.

MOBILE  
Marine Specialty Co.

BIRMINGHAM  
Pate Supply Co.

TUSCALOOSA  
Cole Supply Co.

MERIDIAN  
Southern Pipe & Sup. Co.

ATLANTA  
Fulton Supply Co.

JACKSONVILLE  
J. G. Christopher Co.

TAMPA  
Knight & Wall Co.

ERIAL

mate-

aking

draw-

sheet

glass,

company,

Ohio.

ionally

ink or

e, oil

icals.

le off

s flat

kling.

asures

rawing

which

on

the

boxed

aged

the

fa-

inds

than

earlier

green.

try to

even

omer

now

seven

ent

of

temper-

or

from

The

anaria,

at the

when

need

have

labor

and

obtain-

ing

rim

D. x

wheel

diam-

n. A

wheel

which

on

the

boxed

aged

the

fa-

inds

than

earlier

green.

try to

even

omer

now

seven

ent

of

temper-

or

from

The

anaria,

at the

when

need

have

labor

and

obtain-

ing

rim

D. x

wheel

diam-

n. A

wheel

which

on

the

boxed

aged

the

fa-

inds

than

earlier

green.

try to

even

omer

now

seven

ent

of

temper-

or

from

The

anaria,

at the

when

need

have

labor

and

obtain-

ing

rim

D. x

wheel

diam-

n. A

wheel

which

on

the

boxed

aged

the

fa-

inds

than

earlier

green.

try to

even

omer

now

seven

ent

of

temper-

or

from

The

anaria,

at the

when

need

have

labor

and

obtain-

ing

rim

D. x

wheel

diam-

n. A

wheel

which

on

the

boxed

aged

the

fa-

inds

than

earlier

green.

try to

even

omer

now

seven

ent

of

temper-

or

from

The

anaria,

at the

when

need

have

labor

and

obtain-

ing

rim

D. x

wheel

diam-

n. A

wheel

which

on

the

boxed

aged

the

fa-

inds

than

earlier

green.

try to

even

omer

now

seven

ent

of

temper-

or

from

The

anaria,

at the

when

need

have

labor

and

obtain-

ing

rim

D. x

wheel

diam-

# Personalities



## IN THE NEWS

**John B. Craig** has been elected Director of Purchases for American Bridge Division of United States Steel



**John B. Craig**

Company, Pittsburgh, Pa. He succeeds Dan Hammerschmidt, retired. Mr. Craig was graduated from the University of Pittsburgh with an A.B. degree in business administration. He started with the company in 1929, and held a number of important posts. In 1951, he was named Assistant Purchasing Agent, the position he held at the time of his present appointment.

**Philip C. King** has been named Purchasing Agent for Metals Disintegrating Company, Elizabeth, N. J. Prior to this appointment, he handled purchasing for a number of major firms, including the Vanadium Corporation of



**Philip C. King**

America. For a period, Mr. King was active in his own business, operating as the Steel Trading Corporation of Pittsburgh, Pa.

**Joseph E. Jack** has been promoted to Purchasing Agent for the Central Ohio Steel Products Company. Mr. Jack succeeds Norwood K. Keller who has been named assistant to the President.

**G. Gerald Misner** has been named Purchasing Agent for the Harper Electric Furnace Corporation, Buffalo, New York. Mr. Misner has been with the company for the past five years.

**Ralph M. Wescott** has been promoted to Purchasing Agent for Keyes Fibre Company of Stroudsburg, Pa. He has been assistant to the Purchasing Agent for the past ten years.

**J. S. Smith** has been appointed Director of Purchases and Production Planning for Wagner Electric Corporation, St. Louis, Missouri. The follow-



**J. S. Smith**

ing appointments have also been made:

H. S. Garrett as Purchasing Agent with full responsibility for the administration of purchasing activities;

J. V. Christman, M. W. Cox and E. B. Shanklin as Assistant Purchasing Agents;

Fred Cheney as Manager of Inventory Requirements.

**Aubrey Morgan** has been appointed Vice President of Panther Oil & Grease Company, Fort Worth, Tex. Mr. Morgan is public relations chairman of the Fort Worth Purchasing Agents Association.

**Woodrow W. Oliver** has been appointed Cleveland district Purchasing Agent for American Steel & Wire Division, succeeding Otto C. Langenhan,



**Woodrow W. Oliver**

who has retired after 45 years of service in the purchasing field. Mr. Oliver started with the company's purchasing department in 1934 as an office boy, and rose through a succession of assignments to the post of buyer. He comes to his new position from Worcester, Mass., where he has served for two years as Eastern district Purchasing Agent for the division.

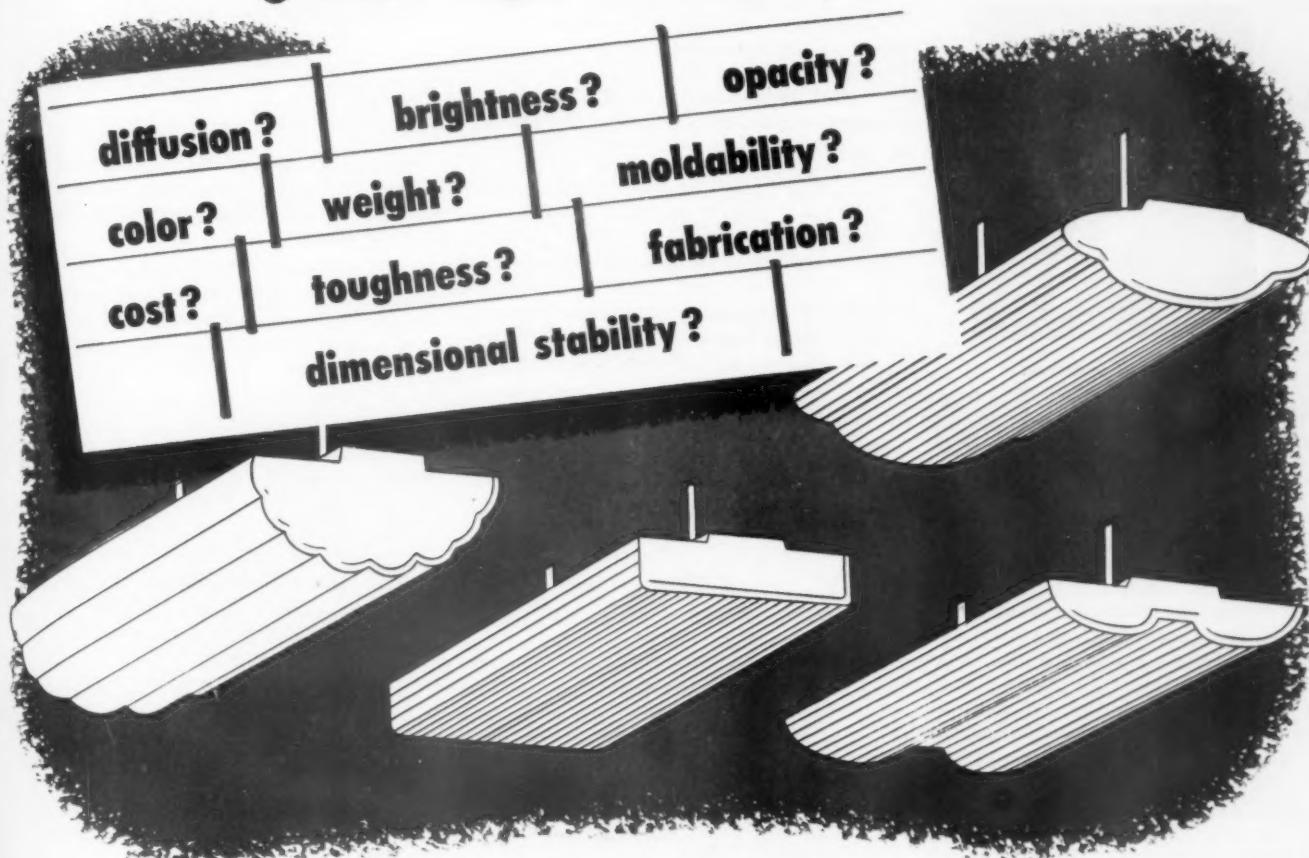


**Otto C. Langenhan**

Elmer R. Johnson has been named to succeed Mr. Oliver as Eastern district Purchasing Agent. Mr. Johnson

(Please turn to page 252)

# What's your lighting fixture problem?



## Koppers "EVENGLO" Polystyrene is your best solution!

KOPPERS "EVENGLO" POLYSTYRENE can solve your lighting fixture problem best because it gives you more optical and mechanical advantages than other materials commonly used for fluorescent fixture applications.

"Evenglo" is optically superior because you can exercise more accurate control over opacity, diffusion and color in the finished product. In effect, you can specify the color tone of light, degree of brightness and amount of diffusion desired, and you can be sure your specification will be

maintained exactly in each "Evenglo" panel, from first to last.

Koppers Polystyrenes 8X and 81 are the types normally used in formulating "Evenglo." Its high heat distortion temperature gives it a decided advantage over competitive polystyrenes. "Evenglo's" unrivaled combination of easy moldability, dimensional stability, light weight, ease of fabrication and low cost makes it a desirable choice over other plastics and glass.

Koppers application engineers will be glad to demonstrate the versatility of "Evenglo" Polystyrene and to recommend the "Evenglo" formulation that fits your specific requirements.

### Write for New, Free Bulletin C-2-162

It contains technical data about "Evenglo's" physical and optical properties, and outlines the scope of its usefulness in the lighting field.



Koppers Plastics Make Many Products Better and Many Better Products Possible.



## Koppers Plastics

KOPPERS COMPANY, INC., Chemical Division, Dept. P-13, PITTSBURGH 19, PA.

SALES OFFICES: NEW YORK • BOSTON • PHILADELPHIA • CHICAGO • DETROIT • LOS ANGELES

(Continued from page 248)

has been associated with the company since 1918, when he started as a draftsman. He has held a number of positions



Elmer R. Johnson

at both of the division's plants in Worcester. In 1951, he was appointed assistant district Purchasing Agent.

**Richard M. Hoover** has been transferred to the central Purchasing department, in the Raw Materials Section, of Monsanto Chemical Company, St. Louis, Mo. Mr. Hoover has been with the company since 1947. He has a B.S. and an M.S. degree in chemical engineering from the University of Kansas. In 1942, he received an award in the National Science Clubs' annual science talent search.

**Eugene E. Dunstan** has been appointed consultant to the Scientific and Technical Equipment Division of the National Production Authority, Washington, D. C. Mr. Dunstan, Director of Purchasing for Perkin-Elmer, Norwalk, Conn., will remain with the company while serving as consultant on optical problems to the Division.

**C. W. Bollman, Jr.** has been appointed General Purchasing Agent of the following railroads: The Newburgh and South Shore Railway Company; The Lake Terminal Railroad Company, Donora Southern Railroad Company, McKeesport Connecting Railroad Company, Northampton and Bath Railroad Company, and Hannibal Connecting Railroad Company. His headquarters are in Pittsburgh, Pa.

**L. James Radin** has been appointed Sub-Contract Manager for Engineering and Research Corporation, Riverdale, Maryland. Prior to his association with the company, he was associated with Fairchild Engine & Airplane Corporation and Sperry Gyroscope Company.

**R. M. Hornbeck** has been appointed Vice President in charge of Purchasing for Westinghouse Air Brake Company of Pittsburgh. Mr. Hornbeck has been general Purchasing Agent since 1946. He succeeds Henry W. Wolff, who has retired after fifty two years of activity in this field.

**C. F. Yoders** has been promoted to Purchasing Agent for Pittsburgh forgings Company, Coraopolis, Pa., to succeed M. D. West, who has been granted a leave of absence. Mr. Yoders, who has been with the company for thirty years, will continue to direct steel procurement operations in his new position.

**J. R. Handyside**, formerly buyer, has been appointed Assistant Purchasing Agent. He has been with Pittsburgh forgings for ten years. W. C. Geesey, who has been assistant to Mr. Yoder, has been named Manager of planning and scheduling. He has been a company employee for twelve years.

**F. W. Browning** has been named Purchasing Agent of the United States Box Board and Paper Company of New York.

**J. S. Roscoe** has been appointed Executive Vice President in charge of Business Administration for the Lincoln Electric Company, Cleveland,



J. S. Roscoe

Ohio. Mr. Roscoe has been with Lincoln since 1924, when he was graduated from the Ohio State University with a degree in electrical engineering. He has been Director of Purchasing since 1950. Prior to that he held various other important posts with Lincoln in many sections of the country.

**W. B. Hoffman** has been appointed Director of Purchasing for Keco Industries, Inc. of Cincinnati, Ohio.

**Floyd R. Chambers** has been appointed Purchasing Agent for Standard Conveyor Company, North St. Paul, Minnesota. Mr. Chambers succeeds Harry Keech, who has retired after a number of years with the company.

**Ira M. King** has been named Purchasing Agent for the Central Division of Stanolind Oil and Gas Company, Oklahoma City, Oklahoma. King joined the company in 1943 and held various posts until 1950, when he became a buyer in the Purchasing Department. He has been connected with the oil industry for the last 24 years. He attended Oklahoma A. and M. College where he majored in commerce and marketing.

**Roy C. Manderbach** has been elected Vice President in Charge of Purchases for Narrow Fabric Company, Reading, Pa.

**R. W. Rogers** has been promoted to general Purchasing Agent of the Seaboard Air Line Railroad to succeed W. G. Jones, who has retired after 50 years with the company.

**Thomas J. Meskill**, Purchasing Agent for the Stanley Works, has been appointed to the Police Board of New Britain, Conn.

**Lester F. Wallace**, Portland City Purchasing Agent, has been elected president of the Maine Municipal Association.

**Wellington A. Bamford** has been appointed Purchasing Agent for the Bangor and Aroostook Railroad, Bangor, Maine.

**N. D. Powers** has been appointed Chief of the Purchasing Branch, Headquarters Army and Air Force Exchange Service in New York. Mr. Powers has had fifteen years experience in purchasing. He joined the Exchange Service a year ago, but during World War II served as assistant Chief of this branch.

**Robert R. Lucas** has been named Production Control Manager for the Brush Development Company, Cleveland, Ohio. In his capacity, Mr. Lucas



Robert R. Lucas

will be in charge of purchasing, production planning and materials control, shipping and receiving, and salvage. Mr. Lucas received an A.B. degree in mathematics from Harvard. He also holds an LLB degree from Cleveland Law School and a certificate in meteorology from the University of Chicago. He received an Ohio C.P.A. certificate in 1950.

**George S. Kuykendall**, Purchasing Agent of Moore-McCormack Lines, Inc., has been named chairman of the American Steamship Purchasing Agents' Group of the Purchasing

(Please turn to page 254)

I'll tell you why . . . because they're designed to take all the punishment of mass-production plating—and last far longer. Hanger assembly is built extra rigid to reduce maintenance. It slips right into those new-type saddle brackets on the tank for extra strong support plus greater ease in handling. That's a typical H-VW-M performance-proved feature.

And no matter what the plating problem there's an H-VW-M Mercil Type Cylinder built for the job. For example . . . Plexiglas, with ribless, one-piece, convex panel construction—ideal for temperatures to 180°F. . . . or Melamine, for use in temperatures to 210°F. Every type is avail-

able in a wide variety of sizes—with a broad choice of contacts—in addition to the standard flexible dangler. Individual motor drive is standard equipment, although bevel-gear drive is available if desired. You'll get a better plated product from these barrels—a more uniform deposit—*much more economically*.

Plating barrels are just one of many results of over eighty years of constant plating development—a continuing policy summed up in H-VW-M Platemanship . . . your working guarantee of the best that industry has to offer—not only in plating barrels—but in every phase of plating and polishing.

Photo courtesy of H. L. Judd Co., Wallingford, Conn.

© 8655

## why H-VW-M Mercil Type Plating Barrels?



For full information on H-VW-M Mercil Type Plating Barrels ask for Bulletin PB-108.

Your H-VW-M combination—is of the most modern testing and development laboratory—of over 80 years experience in every phase of plating and polishing—of a complete equipment, process and supply line for every need.

HANSON-VAN WINKLE-MUNNING CO., MATAWAN, N. J.  
PLANTS AT: MATAWAN, N. J. • ANDERSON, INDIANA  
SALES OFFICES: ANDERSON • BOSTON • CHICAGO • CLEVELAND  
DAYTON • DETROIT • GRAND RAPIDS • LOS ANGELES • MATAWAN  
MILWAUKEE • NEW YORK • PHILADELPHIA • PITTSBURGH  
ROCHESTER • SPRINGFIELD (MASS.) • STRATFORD (CONN.) • UTICA

# H-VW-M



INDUSTRY'S WORKSHOP FOR THE FINEST IN PLATING AND POLISHING PROCESSES • EQUIPMENT • SUPPLIES



## Buy Better... Buy FRIGIDAIRE

### Water Coolers Air Conditioning Refrigeration

More and more men who buy for industry are making Frigidaire their first source for cooling equipment of every kind. They've found it pays real returns in higher performance, lower operating and maintenance costs, and real dependability.

Call the Frigidaire distributor or Factory Branch that serves your area. Or write: Frigidaire Division, General Motors Corp., Dayton 1, O.

 **FRIGIDAIRE**

*the most complete line of refrigeration and air conditioning products in the industry.*

(Continued from page 252)  
Agents Association of New York. John P. Neary, Purchasing Agent for Robin Line, has been made vice chairman.

Roger E. Gay, president of the Bristol Brass Corporation, Bristol, Conn., has been re-elected president of the American Standards Association. Edward T. Gushee has been re-elected vice-president. Mr. Gushee is vice-president of the Detroit Edison Company, and a recipient of the Shipman Medal Award for distinguished service to purchasing.

A. H. Reynolds, Purchasing Agent of Leeds & Northrup Company of Ger-



**A. H. REYNOLDS**

mantown, has been elected president of the University of Pennsylvania Engineering Alumni Society.

William M. Bridwell has been appointed General Purchasing Agent for the General Steel Castings Corporation, St. Louis, Mo., and will direct all work at their plants in Granite City, Ill., and Eddystone, Pa. He entered the purchasing department in 1941 and was made Purchasing Agent in 1943.

**CARL F. UNRUH**



Carl F. Unruh, Director of Purchasing for Ford Motor Company, died unexpectedly of a heart attack at his home in Farmington, Michigan, on December 4. Mr. Unruh joined Ford as a tool maker at Highland Park in 1916. He was transferred to the purchasing department in 1925, where he advanced until he was appointed Director of Purchasing in 1949.

# *The ONE ingredient you can't do without*



In mass-production systems, which is where most of our products are used, no production rate or cost schedule will stand up unless you can count on absolutely consistent quality in your materials. That you *must* have, and there is a tradition of craftsmanship in our plants which has protected users of Columbia and Summerill products for a great many years.



*Columbia* STEEL & SHAFTING COMPANY

SUMMERILL TUBING COMPANY DIVISION  
PITTSBURGH 30, PENNSYLVANIA

SPECIALIZING IN COLO FINISHED STEEL BARS and SEAMLESS STEEL TUBING

# Among the Companies You Buy From

Pittsburgh, Pa.—Crucible Steel Company of America. George W. Stamm has been appointed to the newly created post of assistant to the vice-president in



George W. Stamm

charge of sales. In his new position, Mr. Stamm will act as liaison between the product sales managers, area managers, branch managers, and top management. Robert C. Kuhn has been advanced to succeed Mr. Stamm as branch manager in Cleveland.

Cleveland, Ohio—The Baker-Raulang Company, Baker Industrial Truck Division—E. E. McVeigh has been named manager of commercial sales in the company's western division. R. T. Tiebout has been appointed manager of government sales.

Newark, N. J.—Reliance Electric & Engineering Company. The district sales office here has been moved to new and larger quarters at 535 High Street.

New Brighton, Pa.—Townsend Company. David V. Johnson has been appointed assistant to the general sales manager. In his new position, Mr. Johnson will develop merchandising and promotion plans for all products.

Elgin, Illinois—Shakeproof Division, Illinois Tool Works. E. U. T. Berthelsen and K. C. MacKay have been appointed assistants to the vice-president and manager, E. W. Fuller.

Baltimore, Md.—Bendix Radio Communications Division of Bendix Aviation Corporation. Rear Admiral Willis E. Cleaves, U.S.N. (Ret.) has been named general sales manager.

Fort Wayne, Ind.—United States Rubber Company. Carroll C. Parker has been appointed assistant manager of grinding wheel sales for the company's mechanical goods division.

Cleveland, Ohio—Udylite Corporation. John E. Giere has joined the regional sales staff here.

Lorain, Ohio—White-Roth Machine Corporation. Robert I. Roth has been appointed vice-president in charge of western sales. He will make his headquarters in Dallas, Texas.

Jacksonville, Fla.—Utica Drop Forge & Tool Corporation. Theron D. Whidden has been named southeastern representative for the complete line of Utica tools.

St. Louis, Mo.—Bemis Bro. Bag Company. Two new manager posts have been created. Judson Bemis will be director of central operations. He was formerly manager of the company's



Judson Bemis

Minneapolis bag factory and sales division. H. J. Wehrenbrecht will be director of southern operations. He was formerly manager of the New Orleans plant and sales division. O. M. Smith will succeed Mr. Bemis as manager at Minneapolis. Mr. Wehrenbrecht will be succeeded at New Orleans by V. H. Watts.

Cleveland, Ohio—American Steel & Wire Division of United States Steel Corp. The following executive changes in the sales organization have been announced: James R. Mohr has been named assistant manager of sales in the division's district office at Chicago; Charles P. Greenlee has been appointed to succeed Mr. Mohr as assistant manager of sales at Detroit; William M. Welsh has been named salesman in the Detroit office.

Detroit, Mich.—The Timken Roller Bearing Company. William Strickland, sales engineer, has been transferred from the Detroit office to offices here.

Cedar Rapids, Iowa—The American Brass Company. A new district sales office has been opened here. John N. Allen, formerly of the company's Chicago sales staff, has been appointed district sales manager.

Philadelphia, Pa.—Chase Brass & Copper Company. Willard M. Brown, previously manager of the Washington, D. C. office, has been appointed district sales manager here. Mr. Brown joined the company sales staff in 1927.

Milwaukee, Wis.—DeWalt, Inc. Jerome H. Eigenberger has been appointed district sales manager. His territory will also include much of Illinois and other sections of Wisconsin.

Chicago, Ill.—DeLaval Steam Turbine Company. R. G. Baker has been appointed regional sales representative. His sales representation will extend over the territories of the company's Detroit and Minneapolis operations, but he will continue to make his headquarters here. C. C. Bray has been named manager of the Chicago district office to succeed Mr. Baker.

Cincinnati, Ohio—Lunkenheimer Company. A new central district has been established with headquarters in Dallas, Texas. Elmer R. Tieberman has been named to head the district, which will be divided into five territories.



Elmer R. Tieberman

Marshall N. Stickel, with headquarters at Houston, will have charge of northeast and southeast Texas and southwestern Louisiana. Joseph A. Birkhead will have charge of the southwestern Texas territory, with headquarters at Houston. D. R. Davis will have charge of the Oklahoma, Kansas and western Missouri territory, with offices at Tulsa. William A. Boles, with headquarters at Baton Rouge, La., will direct the southeastern and northern Louisiana, southern Mississippi and southwestern Arkansas territory. Byron P. Roland has been appointed representative in charge of west Texas and New Mexico territory, with headquarters at Midland, Texas.

# One order

## saves time . . . : simplifies procedures

Every time you receive a requisition for an electrical drive you are confronted with purchasing two main components—a motor and its control. The two work together as a team. In fact, the control characteristics must dovetail with the characteristics of the motor. It's only logical that a manufacturer that builds both motors and controls can co-ordinate their design and manufacture down to the smallest detail.

By specifying Westinghouse matched motors and controls, you insure your investment. They are paired for performance. You also profit by the undivided responsibility offered. This means one source for deliveries . . . one source for servicing and repair parts.

*Plus*, you can place one order for *both* motors and control. This cuts in half the work of order-

ing. Procedures are simplified every step of the way.

What's more, you receive the latest, most advanced design of equipment. Take the Life-Line motor and Life-Linestarter, for example. Each is the result of never-ending motor and control research and manufacture. Each incorporates exclusive features unobtainable on other equipment.

Why not simplify procedures . . . benefit from undivided responsibility . . . insure production schedules by ordering matched Westinghouse motors and controls. A check with your nearby Westinghouse representative will bring you full information. Call him today. Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pennsylvania.

J-21660-A

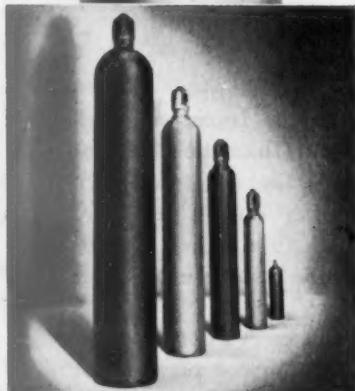
YOU CAN BE SURE...IF IT'S  
**Westinghouse**



**The finest**

SEAMLESS STEEL CYLINDERS  
FOR HIGH PRESSURE GASES

**America has  
ever produced**



**The character of the manufacturer shows in the product.**  
**Harrisburg manufactures a complete line of seamless steel cylinders for storage and transportation of high-pressure gases . . . fixed, liquid, and medical.**  
**Sizes, capacities, and types for every purpose . . . made to I.C.C. Specifications in Domestic and Export lines.**

**Harrisburg**



**A copy of the Harrisburg High-Pressure Cylinders Catalog will be mailed promptly on request.**

HP52-2



100 Years in Pennsylvania's Capital

**Harrisburg Steel**  
CORPORATION HARRISBURG, PENNSYLVANIA

New Brighton, Pa.—Townsend Company. Robert J. Ritchey has been appointed assistant general sales manager. He has been director of the market



Robert J. Ritchey

development division of United States Steel Company since 1951. Prior to that, Mr. Ritchey had been active in sales promotion and market development management with various U. S. Steel Corporation divisions since 1937.

Youngstown, Ohio—The Youngstown Sheet & Tube Company. Ted C. Schraer, formerly Cincinnati district sales manager, has been moved to general offices here as assistant manager of conduit sales. C. B. Mullender succeeds Mr. Schraer as manager of the Cincinnati sales office.

Boston, Mass.—Berger Manufacturing Division, Republic Steel Corporation. John P. Kenney has been appointed district sales manager of steel building products sales here.

New York, N. Y.—Baker Raulang Company, Baker Industrial Truck Division. Edmund C. Hormann has been named regional sales manager for the metropolitan area. Previously, he had been doing sales executive work in this section for Towmotor Corporation and The Mobilift Corporation.

Riverside, N. J.—Riverside Metal Company. The following changes in sales personnel have been announced:



Joseph A. Davis

Joseph A. Davis, formerly home office sales manager has been named Chicago district sales manager; Joseph F. Linus has been promoted to home office sales manager; George W. Jones has been advanced to sales service manager.

Boston, Mass.—Wagner Electric Corporation. John T. Kemper has been named district sales manager to replace M. E. Comstock, who has retired after nearly 34 years' service with the company.

Cincinnati, Ohio—Carey Manufacturing Company. R. D. Cross has been named special sales representative with headquarters at the company's general offices here. He will service accounts in all marketing areas.

Newark, N. J.—Inertol Company. James H. Ginn has been named sales and promotion manager, with offices here.

Cincinnati, Ohio—Trailmobile Inc. Fred Rahe, head of sales management division, has been promoted to assistant manager of fleet sales with headquarters in New York. Finis H. Haskins will succeed Mr. Rahe as chief of sales management division here.

Chicago, Ill.—The Liquid Carbonic Corporation. William D. Lamont has been appointed sales manager of the Gasweld division. Prior to his new



William D. Lamont

position Mr. Lamont was president of the Detroit Industrial Welding Company. He has been active in all phases of heavy industrial welding since 1931.

Minneapolis, Minn.—St. Paul Hydraulic Hoist. Leo M. Brown has been appointed sales manager. He previously served as assistant sales manager, and prior to that was a district manager in the south central states.

Philadelphia, Pa.—F. J. Stokes Machine Company. G. Jewett Crites has been named manager of sales of the vacuum furnace department.

Kansas City, Mo.—Pittsburgh Corning Corporation. Howard G. Jones has been appointed sales manager of the newly opened district sales office here. W. T. Clark, H. R. Conant, Jr., J. P. Dillon, R. L. Perkins and R. B. Shofstall will represent the company in the territory covered by the new sales office.

Indianapolis, Ind.—White Manufacturing Company. Robert M. Coyner has been appointed mid-western sales manager.

# We're TOPS!

"I'M DOUBLY STRONG  
BECAUSE I'M THE ONLY GUY WITH  
TWO EXTRA-DUTY  
CATHODES AT  
EACH END"

"AND I'VE GOT A BIGGER,  
STRONGER, LONG-LIFE  
FILAMENT"



"Built Stronger To Burn Longer"

Duro-Test lamps are built to last and last . . . they're specifically designed to meet the tough operating conditions of commercial and industrial installations.

Their rugged construction means fewer replacements, fewer man-hours lost in maintenance . . . they cost less because they last longer.

Write today for complete details and your Duro-Test Catalogue.

Manufacturer of incandescent and fluorescent lamp bulbs.

**DURO-TEST CORPORATION**  
North Bergen, New Jersey

# 100,000 MILES...

## ON MINIATURE RUBBER TIRES

Photograph courtesy of  
Cummins Engine Company, Inc., Columbus, Indiana

Tire-shaped rubber packing rings for cylinder liners in Cummins diesel engines are small but important. They provide a seal between oil and water—a seal that must be perfect whether the engine is cold or operating at high temperatures. Moreover, these rubber rings must stand up for at least the equivalent of 100,000 miles of operation.

These severe operating requirements presented a rubber problem with exacting specifications: resistance to sustained heat—controlled swell in oil—exceptional compression quality—precision tolerances.

Continental met all these specifications and produced a rubber ring that gives outstanding service in an outstanding diesel engine.

The successful production of this specialized rubber part is typical of the complete service in rubber offered by Continental.

When *you* need molded or extruded rubber parts, why not enlist the assistance of Continental?

### LET US SEND YOU THIS CATALOG

This new engineering catalog lists hundreds of standard grommets, bushings, rings and extruded shapes. It will be a valuable addition to your working file. Send for your copy today or . . . See our Catalog in Sweet's File for Product Designers

MANUFACTURERS SINCE 1903

# CONTINENTAL

## RUBBER WORKS

1983 LIBERTY STREET • ERIE 6, PENNSYLVANIA



### BRANCHES

Baltimore, Md.  
Boston, Mass.  
Buffalo, N. Y.  
Chicago, Ill.  
Cincinnati, Ohio

Cleveland, Ohio  
Dayton, Ohio  
Detroit, Mich.  
Hartford, Conn.  
Indianapolis, Ind.

Kansas City, Mo.  
Los Angeles, Calif.  
Memphis, Tenn.  
New York, N. Y.  
Philadelphia, Pa.

Pittsburgh, Pa.  
Rochester, N. Y.  
St. Louis, Mo.  
San Francisco, Calif.  
Syracuse, N. Y.

**Detroit, Mich.**—Standard Pressed Steel Company. Herbert T. Andrew has been appointed a salesman here. His territory includes most of Michigan, the northwestern part of Ohio and the northern third of Indiana.

**St. Louis, Mo.**—National Bearing Division of American Brake Shoe Company. Albert L. Hunt has been promoted to the position of manager of industrial sales.

## INDUSTRIAL DEVELOPMENTS

**The Ferry Cap & Set Screw Company**, Cleveland, O., is acquiring for its expanding production the next door 41,000 sq. ft. building of the Ohio Machine and Boiler Company.

**Trailmobile Inc.** has inaugurated an extensive program of expansion of its production facilities and re-layout of its present Cincinnati plant. Work will continue through the first six months of 1953, at a total cost of more than \$1,000,000.

**Walter Kidde Nuclear Laboratories**, New York, N. Y., the first privately-financed research organization devoted primarily to the development of nuclear power for commercial and industrial purposes, has established an advisory committee consisting of two scientists and an economist, all active in the nation's atomic energy program since its inception. The members are: Dr. J. R. Oppenheimer, wartime director of the Los Alamos laboratory; Alexander Sachs, consulting economist and a director of Lehman Brothers, investment bankers; and Dr. Harold C. Urey, former Director of Research at the Manhattan District laboratories at Columbia University, where processes for the separation of Uranium-235 were developed.

**The Goodyear Tire & Rubber Company** has announced plans for a \$1,500,000 expansion program for its chemical division. The project will be an addition to existing Akron facilities for the production of Chemigum synthetic rubber.

**Sierra Drawn Steel Corporation**, Los Angeles, Calif., has established a mill in Seattle, Wash., capable of handling cold finished bars from 1½" to 6". Sierra is the only independently owned cold finishing bar mill in the west.

**Peerless Steel Equipment Company**, manufacturer of steel office furniture, has purchased a new industrial building in Philadelphia for the fabrication and assembly of steel filing cabinets and desks.



*Utilizing ENDURO Stainless Steel, Eastman Kodak Company has developed this fast, safe continuous process which replaces the old slow method of making silver nitrate crystals by evaporation in open porcelain dishes.*

## ENDURO STAINLESS STEEL

### Makes Continuous "Photo Silver" Process Practical

- Near-perfect purity is essential for silver nitrate crystals, chief ingredient of photographic emulsions. Neither contamination products, nor contamination from process equipment, can be tolerated.

That's why, in Eastman Kodak Company's relatively new continuous process for manufacturing "photo silver," all product-contacting surfaces are ENDURO Stainless Steel. The 75-pound silver ingots—99.97% pure—are dissolved with nitric acid in ENDURO containers. Crystals are formed and grown in 1000-gallon ENDURO tanks, spun in ENDURO baskets and dried in ENDURO dryers.

Here, ENDURO resists the action of silver-dissolving nitric acid. It faithfully protects the purity

of the silver salts. ENDURO does not contaminate metallically. It resists rust and corrosion, is remarkably easy to clean and to keep clean, discourages the accumulation of possible contaminants.

Have you a special problem—in process or product? Republic—world's largest producer of alloy and stainless steels—offers you the confidential services of technical and metallurgical staffs. Your letter will bring prompt and competent assistance on any development work involving the use of stainless steels. Just write:

**REPUBLIC STEEL CORPORATION**  
Alloy Steel Division • Massillon, Ohio  
GENERAL OFFICES • CLEVELAND 1, OHIO  
Export Department: Chrysler Building, New York 17, N.Y.

See and Hear  
**"THE STORY OF STAINLESS"**

Film—color, 16 mm sound film  
—27 minutes running time.  
Dramatic . . . historic . . . interesting.  
Available to qualified groups without charge.  
Requires 16 mm sound projector.  
Send name of organization, type of projector, requested date to Ideal Pictures  
Corp., Dept. T-4, 65 E. So. Water St., Chicago 1, Ill., or write Republic Steel, Dept. K, Cleveland 1, O.

*Republic*  
**ENDURO STAINLESS STEEL**

Other Republic Products include Carbon and Alloy Steels—Pipe, Sheets, Bolts and Nuts, Tin Plate, Tubing, Niles Barrels and Drums

**"THIS LUBRICANT CUT OVERHAULS IN HALF"**

—says WESTERN AUTO TRANSPORTS, INC.

"Operating over 200 tractors and 200 trailers from Detroit to the West Coast, we encounter temperatures from 120° above across the desert to 40° below in the mountains of Colorado. We have found that with LUBRIPLATE our wheel bearing packing mileage has tripled. Since using Lubriplate A.P.G.-90 in our transmissions and differentials, we are getting double the mileage between their overhauls."

For nearest LUBRIPLATE distributor, see Classified Telephone Directory. Send for free 56-page "LUBRIPLATE DATA BOOK" . . . a valuable treatise on lubrication. Write LUBRIPLATE DIVISION, Fiske Brothers Refining Co., Newark 5, N. J. or Toledo 5, Ohio.

**REGARDLESS OF THE SIZE AND TYPE OF YOUR MACHINERY, LUBRIPLATE LUBRICANTS WILL IMPROVE ITS OPERATION AND REDUCE MAINTENANCE COSTS.**



Carter Controls, Inc., Lansing, Ill., is a new company manufacturing hydraulic and pneumatic equipment. It will provide stock service in standard cylinders and valves to promote rapid delivery. Its founder and president is J. Carter Miller, founder of Ortman-Miller Machine Company.

The Girdler Corporation, Louisville, Ky., has started operation of a new plant for the production of activated carbon from hardwood char. The plant includes several new developments that are a part of a continuous process for the manufacture of several types of activated carbon.

Williamson Adhesives, Inc., manufacturer of industrial adhesives, has moved into a new plant at Skokie, Ill. The new installation more than doubles the manufacturing facilities of the old plant. The building also houses the Williamson Specialty Compounding Division, which develops new products, and new methods of processing, handling, packing and shipping of special materials.

Crucible Steel Company of America has begun operation at its new 1,000 ton a day blast furnace at Midland, Pa. The project, costing about \$12,000,000, will increase Crucible's iron production by 60%.

Wood-Compton Co., 25010 Lakeland Blvd., Cleveland 23, O., is a new firm specializing in sale and service of industrial power apparatus.

Brainard Steel Canadian Division of Sharon Steel Corporation has been announced by Brainard Steel Division of Warren, Ohio, producer of steel strapping, strapping tools and accessories. General offices and plant are located in Toronto. The company will manufacture various steel strapping products and handle sales and service throughout Canada.

Yates-American Machine Company, Beloit, Wis., has acquired the manufacturing facilities of Big Four Carbide Tool Company, Cincinnati, O., and moved them to Beloit. With the new addition, Yates-American will be in a position to supply a complete line of cutting equipment for all woodworking needs.

The Balmar Corporation, Woodberry, Baltimore, Md., has changed its name to Franklin Balmar Corporation. The new corporation will continue as the manufacturing subsidiary of the Franklin Railway Supply Company.

Vickers Incorporated has added new facilities to its El Segundo Division, Los Angeles, to meet specialized hydraulic design needs of West Coast manufacturing plants. Engineering will be handled by specialists in the development of custom built power units and other hydraulic items.



### SAVE YOU 50% IN COST!

THEY'RE SOLDERLESS . . . V CORRUGATIONS CLAMP WIRES SECURELY . . . HAVE NO SEPARATE PARTS . . . REQUIRE ONLY SCREWDRIVER, WRENCH OR PLIERS TO INSTALL!

PART NO.		B & S WIRE	
	Plain Hex. Head Screw	Max.	Min.
SC-6	SC-12X	2-12 Solid	2-20
	SC-6X	2-6 Strand	2-12
	SC-GX549	2-6 Strand	2-12
	SC-4X	2-4 Strand	2-10
	SC-2X	2-2 Strand	2-8



### FINGERTIP CONTROL

Revolator Go-Getter — telescopic straddle type lift truck — a bear for work in crowded areas, narrow aisles. Fully automatic — extraordinarily maneuverable 200° turning arc — 2500 lb. capacity — very slight operator training necessary. Write for full details of this and many other models.

**REVOLATOR CO.**  
8752 TONNELE AVENUE • NORTH BERGEN, N.J.

# GRITCLOTH

TOMORROW'S SANDING FABRIC TODAY!

USE WET OR DRY **BAY STATE** (R) NON-CLOGGING  
 USE BOTH SIDES **No. 320 GRITCLOTH** By Machine or Hand  
 FLAT OR FOLDED ABRASIVE PRODUCTS WESTBORO, MASS.  
 LONG LIFE

10 to 15 TIMES LONGER LIFE

THOUSANDS OF SUPER-SHARP EDGES THAT KEEP ON CUTTING

SEND FOR SAMPLE

**ANOTHER SPARKLING BAY STATE "FIRST"!**  
 Once and for all, GRITCLOTH solves the age-old problem of clogging sandpaper and other types of coated papers. GRITCLOTH'S revolutionary open-mesh design lets the removed particles flow right through, and the sharp abrasive teeth keep right on cutting. Actual tests show 10 to 15 times the life of ordinary coated papers.

For all finishing jobs on either wood or metal, IT'S GRITCLOTH TODAY.

**IT'S NEW IT'S BETTER IT'S BAY STATE**

BAY STATE ABRASIVE PRODUCTS CO., WESTBORO, MASS., U. S. A.  
 Branch Offices and Warehouses — Chicago, Cleveland, Detroit, Pittsburgh  
 Distributors — All principal cities  
 In Canada: Bay State Abrasive Products Co. (Canada) Ltd., Brantford, Ont.



any  
shape...  
any  
material...

## SHORT RUN STAMPINGS

**Exclusive Fast-Tooling process saves up to 80% of conventional tooling costs and enables HPL to produce stampings economically in lots of 25 to 25,000 pieces. Parts for experimental or development work or other limited quantity requirements are produced to your most rigid specifications.**

The HPL method permits minor die changes to be made quickly and inexpensively and provides for free maintenance of dies for all future orders. Speedy delivery is available on parts made from any material that can be stamped. Send sample part or blueprint for quotation.

BLANKING • PIERCING • FORMING  
DRAWING • DRILLING • COUNTERSINKING  
TAPPING • EXTRUDING • STENCILING

Write today for Bulletin No. 718



**HPL**  
**Manufacturing Co.**  
15255 Miles Ave. • Cleveland 28, Ohio

**Pyramid Mouldings, Inc., Chicago, Ill., has merged with Western Mouldings & Stampings, Inc., Ontario, Calif. The new subsidiary has been named Western Mouldings, Inc., Division of Pyramid Mouldings, Inc. Pyramid's western division is completely equipped to roll, bend and form mouldings in all metals. Western Mouldings will continue to be managed by Howard Burleson and his associates.**

**Detroit Harvester Company** has purchased the assets of Clinton Machine Company's Warner Division, East Detroit.

**National Fireproofing Corporation, Pittsburgh, Pa.,** has changed its name to Natco Corporation.

**John A. Roebling's Sons Company, Trenton, N. J., and Roebling, N. J.,** has been bought by a wholly-owned subsidiary of The Colorado Fuel and Iron Corporation. The Roebling business will be operated as a subsidiary of Colorado Fuel and Iron under the Roebling name.

**The Yale & Towne Manufacturing Company** has established a new Yale Lock and Hardware Division to coordinate greatly expanded operations by the company in the lock and hardware business. The new division unifies under one management the manufacture and sales, in the United States, of the company's plants producing Yale brand locks and hardware at Stamford, Conn., Salem, Va., and two new plants now under construction at Gallatin, Tenn., and Lenoir City, Tenn.

**Columbia Machinery and Engineering Corporation, New York, N. Y.,** has acquired all of the assets and manufacturing rights of the Bridgeport Safety Emery Wheel Co., Inc., Bridgeport, Conn., and the Diamond Machine Company of Stratford, Conn. Columbia plans to integrate the two companies, for the time being, with its Hamilton, Ohio division. The action brings together three of the oldest machine tool producers in the country.

**Aluminum Company of America** has announced that cable-producing capacity of its Vancouver, Wash. Fabricating Works will be greatly increased in the immediate future. The new development will cost an estimated \$1,720,000. Completion of this phase of the plant's current expansion program is scheduled for late 1953.

**Alloys and Products, Incorporated, New York, N. Y.,** is now producing and marketing Everdur ingot for the foundry industry. The name Everdur is a copyrighted trade mark of The American Brass Company, under whose licensing agreement the product will be made and sold.

**The Ramsey Corporation, St. Louis, Mo.,** has purchased all of the assets of the Chemical Division of the Maplewood Products Corporation, St. Louis.

**Kropp Forge Company** has established a new unit known as Kropp Engineered Products, specializing in the development of new and finished materials. The new facility is situated in a modern factory building of 40,000 square feet in Cicero, Ill. The move enables the company to centralize under one roof the finishing and fabricating work on forgings produced by all divisions of the company.

**General Electric Company** has announced that the contract for construction of its multi-million dollar transformer plant in Rome, Ga., has been awarded to the George A. Fuller Company of New York, in association with Van Winkle & Company of Atlanta. While it is expected there will be some delays in construction because of the steel strike last spring, it is anticipated that the plant will be completed about the middle of 1953, with full production capacity to be achieved by 1955.

**Libby-Owens-Ford Glass Company** has formed a new Corrulux Division, based upon acquisition of all the properties and assets of Corrulux Corp., Houston, Tex.



### DEVIL'S PUTTY

FOR  
EASIER SKIMMING

DEVIL'S PUTTY is a new graphite impregnated plastic refractory for steel and gray iron ladle linings; making up spouts and runners; linings for ferrous and non-ferrous metal melting furnaces and similar applications.

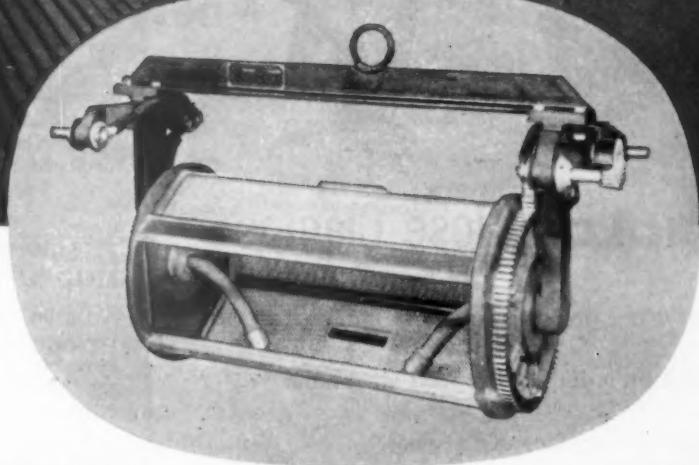
DEVIL'S PUTTY reduces refractory inclusions, thus producing cleaner castings; withstands severe thermal shock without "slutting off"; contains chemically treated graphite that will not burn out of the mix, which aids surface lubrication and permits cleaner and faster pours. Molten metal has no sticking tendency to DEVIL'S PUTTY lining, so, slag rises quickly to top for easy skimming.

Write for useful literature and the name of your nearest Botfield Distributor.

**BOTFIELD**  
REFRACTORIES CO.

789 S. Swanson St., Philadelphia 47, Pa.  
In Canada: Canadian Botfield Refractories Co., Ltd., 171 Eastern Avenue, Toronto

*Another Production*  
**"PESADILLA"\***  
*Cured*



## WITH UDYLITE HI-PRODUCTION LUCITE PLATING BARRELS!

Here's what Mr. J. Sulser, owner and operator of one of Rio de Janeiro's most up-to-date plants<sup>†</sup>, thinks of Udylite equipment.

"Our plant practically runs itself. No more production headaches. No more dangerous bottlenecks or equipment breakdowns, thanks to our twenty-one Udylite Plating Barrels."

After creating his new South American barrelplating plant built around Udylite equipment, Mr. Sulser is getting high production, low dragout losses and NO overtime! And what's more, he's getting all

these benefits with work normally considered too small for barrelplating.

If you're having production troubles, why not let The Udylite Corporation help you, too? A complete research staff . . . plus production know-how . . . are at your service. See your Udylite technical representative or write direct. *The Udylite Corporation, Detroit 11, Michigan.*

### \*HEADACHE

<sup>†</sup>Companhia Fábrica De Botões E Artefatos De Metal

PIONEER OF A BETTER WAY IN PLATING

THE  
**Udylite**  
CORPORATION  
DETROIT 11, MICHIGAN

# No Snag



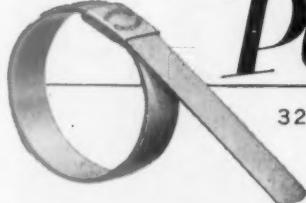
## with PUNCH-LOK Hose Clamps

There are no bolts or other projections to catch or snag, because PUNCH-LOK's double-wrapped steel band and lock are flush with the surface of the hose. Uniform clamping action compresses the hose evenly all around the fitting to secure a leakproof connection as strong as—or stronger than—the hose itself.



"The Sign of a Good Hose Clamp"

See Your Near-by Punch-Lok Distributor

 **Punch-Lok COMPANY**  
321 North Justine Street, Chicago 7, Illinois

### FORK TRUCK SOLVES SLOW MOVING ITEMS STORAGE PROBLEM

Most warehouse superintendents store slow-moving items high up in the racks, where they won't be in the way of more frequently used stock.

This makes handling sense, but it can also create a problem: how do you get at the slow-movers when you need them?



Pallet on truck's forks provides suitable platform.

Harry Ferguson, Detroit, neatly solves that one with a remote controlled fork truck that allows the truck operator to raise himself up to hard-to-reach stock while standing on a pallet on the truck's forks. A hand-held control unit lets him raise and lower the forks by push-button.

Cable for the remote-control unit is housed in reels, under tension, so it won't kink. When it isn't being used, the unit hooks to truck uprights.

### SUPPLIES IN 23 STATES HELP BUILD ATOMIC SUBMARINE ENGINE

During the last 18 months, 3,028 subcontractors and suppliers in 23 states have had a hand in the manufacture of the "atomic engine" for the U. S. S. Nautilus, the nation's first atomic-powered submarine. The engine, both the nuclear reactor and propulsion equipment, is being built by the Westinghouse Electric Corporation's Atomic Power Division under contract to the Atomic Energy Commission and the Navy.

"From the time the Westinghouse Atomic Power Division was organized in 1948 until today, 68 cents out of every dollar of Government funds paid to Westinghouse for this huge task have been passed along to sub-contractors and suppliers," explained Charles H. Weaver, manager of the Division.

"During the last 18 months," he said, "Westinghouse purchased parts and materials for the atomic submarine power plant project from suppliers in 122 different cities throughout the United States. Some 75 percent of these organizations were small companies employing less than 500 people. About 21 percent were large companies, while 5 percent were such organizations as universities, associations and foundations.

Industry in five different states has received more than one million dollars worth of sub-contracts and purchase orders per state from the Westinghouse

(Please turn to page 276)



Successful movers like Suddath must be able to pack quickly and guarantee clean and safe shipments. Suddath prefers the superstandard action of Blue Ribbon tape.

## "Damage claims reduced— thanks to Blue Ribbon gummed tape"

reports Suddath Moving & Storage Co., Inc.



Here is what this well-known moving and storage company reports about Blue Ribbon Superstandard Gummed Tape: "We require a tape with strength, which grabs with lightning-like speed and holds on with bulldog tenacity for an indefinite period of time under varied weather conditions. Only Blue Ribbon provides all these 'MUSTS'! Thanks to Blue Ribbon, our damage claims have been reduced to a very low minimum."

But try Blue Ribbon yourself. Test it in your shipping room for one month. Discover how it can improve your shipping procedures.



**MAIL THE COUPON for fact-packed booklet**

### "HOW TO CUT COSTS IN YOUR SHIPPING ROOM"

Hudson Pulp & Paper Corp., Dept. 25  
505 Park Avenue, New York 22, N.Y.

Please send me your helpful booklet,  
"How to cut costs in your shipping room."

NAME \_\_\_\_\_

COMPANY \_\_\_\_\_

STREET ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_

ZONE \_\_\_\_\_

STATE \_\_\_\_\_



**the A-B-C**

**of M-S-T**



*A  
Quality  
Product*

# *Michigan* Electric Resistance **WELDED STEEL TUBING**

## **ROUND**

$\frac{3}{8}$ " to 4" O. D. 9 to 22 gauge

## **SQUARE-RECTANGULAR**

$\frac{1}{2}$ " to 2" 20 gauge, 1" to  $2\frac{3}{4}$ ",  
14, 16, 18 gauge

Carbon 1010 to 1025

## *Michigan Tubing*

has uniform strength, weight, ductility, I. D. and O. D., wall thickness, machinability, and weldability. It can be flanged, expanded, tapered, swaged, beaded, upset, flattened, forged, spun closed, fluted, and rolled. Available in a wide range of sizes, shapes and wall thicknesses, prefabricated by Michigan or formed and machined in your own plant.



## *Steering Jacket*

Ready for the automobile assembly line is this vital volume produced tubular part of a major control unit.

Lower tube end is reduced to 2.260" O. D. x 10.525" long, held to close tolerance for assembly in line with body of base tube without machining. Upper end is reduced to 2.125" O. D. x 2.562" long, held on center line to extremely close decimal dimensions, with two perforations at tapered section. Michigan workmanship can always be depended upon to assure the exacting tolerances and part uniformity to keep customer assembly operations moving smoothly.

Michigan engineers will be pleased to work with you on an adaptation of welded steel tubing to help you make your product better at lower cost.



Consult us for engineering and technical help in the selection of tubing best suited to your needs.

Plus Fabricating of our own tubing Michigan is interested ONLY IN THE FABRICATION OF Stainless steel, copper, brass and aluminum tubing.

**Michigan** THE OLDEST NAME IN ELECTRIC

**RESISTANCE WELDED STEEL TUBING**

**STEEL TUBE PRODUCTS CO.**

More than 35 Years in the Business  
9450 BUFFALO STREET • DETROIT 12, MICHIGAN  
FACTORIES: DETROIT, MICHIGAN—SHELBY, OHIO

DISTRIBUTORS: Steel Sales Corp., Chicago, St. Louis, Milwaukee, Indianapolis and Minneapolis—Miller Steel Co., Inc., Hillside, N. J.—C. L. Hyland Co., Dayton, Ohio—James J. Shannon, Milton, Mass.—Service Steel Co., Los Angeles, Calif.—Hugh Davis Jr., Sewickley, Pa.—Strong, Carlisle & Hammond Co., Cleveland, Ohio—Globe Supply Co., Denver, Colorado—W. A. McMichaels Co., Upper Darby, Pa.—A. J. Fitzgibbons Co., Buffalo, N. Y.—Harry E. Clark & Co., Houston, Texas—J. B. Beard Co., Inc., Shreveport, La., C. I. C. Crails Co., Birmingham, Ala.

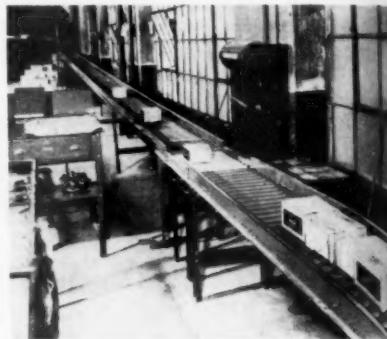
(Continued from page 272)

Atomic Power Division, Mr. Weaver disclosed. These states are Pennsylvania, Connecticut, Ohio, Illinois and California. Close to the million dollar mark are Maryland and Michigan.

Finding firms that are equipped to handle sub-contracts on the atomic engine is not easy. Unlike many production assignments, this work requires complex tools, great accuracy, unusual materials, and greater necessity for safety precautions.

### **SHIPPING SCALE INTEGRATED INTO ROLLER CONVEYOR LINE**

In order to avoid extra handling of out-bound cartons before shipment, it is an easy matter to integrate a scale into the conveyor line which leads from production or storage to shipping. Lamson Corporation, Syracuse, N. Y. recently made an installation in a gum factory shown in the photograph.



Scale in the center of the picture is used to check shipping weights of cartons of gum. If weight is accurate, cartons pass to shipping.

With no waste motion or detours, cartons of gum now move down the roller gravity conveyor line and arrive at the scale section where they are checked for proper shipping weight. After the weight has been verified the cartons move on down the line to be shipped.

This basic principle of including the scale within the conveyor system can be adapted to many types of products and many fields. Ingenious applications of conveyor equipment such as this are characteristic of present day materials handling.

### **EX-PAINT SPRAY GUNS USED FOR SAND BLASTING**

Damaged paint spray guns are still useful if given the treatment suggested at the San Francisco Naval Shipyard, where guns no longer suitable for painting are modified for use in sandblasting. Use of the modified guns for abrasive blasting will increase production, save air by closer control, and permit reaching corners and recesses difficult to blast with usual heavy, cumbersome equipment. Details are available upon request to Navy Technical Press, Office of Information, Navy Department, Washington 25, D. C.

HUNDREDS OF MACHINES—BUT ONLY ONE GREASE!

Read how another manufacturer simplifies and saves with

# PURE OIL. INDUSTRIAL. LUBRICANTS



Simplify and Save

A large midwestern metal-working plant produces chrome-plated trim (hub caps, grills, etc.) for the automotive industry. All types of metal-working equipment—400-ton presses, shears, drills, lathes, roller-levelers and grinders—are used as well as huge chrome-plating machines. Yet *only one grease*—Pure Oil's POCO HT GREASE B—and one dispenser is used for *all* applications! And in 3 years there has been no down time due to lubrication failures.

Here at Pure Oil we specialize in

industrial oils and greases designed to do several different jobs—instead of one specific job.

And to do each job equally well.

For this reason, our technical experts can nearly always help you to reduce your lubricants inventory . . . simplify your lubricating procedure . . . minimize waste and error.

One of our technical experts will be glad to give you full details, right away. Just call your local Pure Oil office\* or write:

THE PURE OIL COMPANY Industrial Sales  
35 E. Wacker Drive, Chicago 1, Illinois

Be sure with Pure

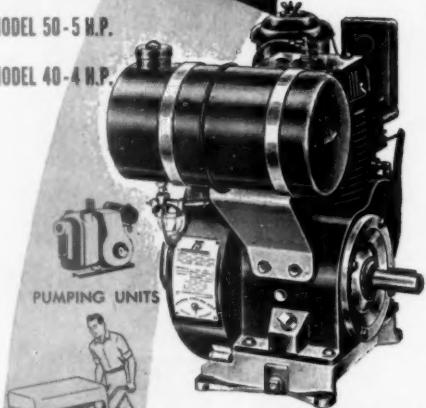
\*Sales offices in more than 500 cities, including: Atlanta, Georgia • Birmingham, Alabama • Charlotte, North Carolina • Chattanooga, Tennessee • Columbus, Ohio • Hattiesburg, Mississippi • Indianapolis, Indiana • Jacksonville, Florida • Madison, Wisconsin • Memphis, Tennessee • Miami, Florida • Minneapolis, Minnesota • New York, New York • Norfolk, Virginia • Parkersburg, West Virginia • Pensacola, Florida • Seaford, Delaware

# GLADDEN ENGINES provide reliable power when and where you need it...

MODEL 75-7 H.P.

MODEL 50-5 H.P.

MODEL 40-4 H.P.



POWER PLANTS



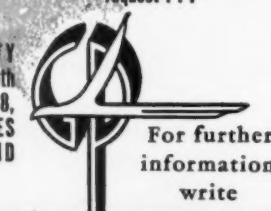
NOW OPERATING OVER 3000 POWER BUGGIES  
AND POWER CARTS IN UNINTERRUPTED SERVICE



VIBRATORS



COMPRESORS



Gladden engineers will  
adapt these engines to  
special installations  
or requirements upon  
request . . .

NEW KANSAS CITY  
BRANCH, 10 West 19th  
Street, Kansas City 8,  
Missouri, PROVIDES  
RAPID SALES AND  
SERVICE.

## GLADDEN PRODUCTS CORPORATION

*Now In the 33rd Year of Engine Building*  
635 Dept. 100 West Colorado  
Glendale 4, California

## Catalyst Makes Heat From Wastes

A waste-burning catalyst which attracted national attention last spring by running an Allentown, Pa. plant on its own smells, has now been applied in the oil refining industry to make steam and electricity.

A partial installation, in a single petroleum-cracking unit at the Sun Oil Company's Marcus Hook, Pa. refinery, is saving the company \$27,500 a year—enough to more than pay for itself—and will return more than \$80,000 yearly when the installation is complete, the Sun Company reports. Extensive further application of the catalyst at Marcus Hook and at Sun's refinery at Toledo, is expected to raise the savings to \$500,000 annually.

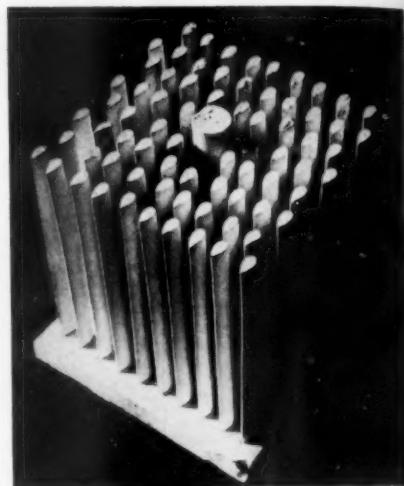
Waste carbon monoxide and hydrocarbons, blown out of petroleum-cracking reactors at Sun in a continuous stream, are burned as they pass through the catalyst. Eighty percent of the heat is converted to steam, the remainder, through a gas turbine, to electric power.

The new oxidation catalyst, basically of catalytic alumina and platinum alloy was developed by Eugene J. Houdry, French-born dean of catalytic scientists and creator of the Houdry process of catalytic cracking of petroleum. Mr. Houdry is president of Oxy-Catalyst, Inc., Wayne, Pa.

In Sun's initial Marcus Hook installation there are 2500 of the oxidizing units. The unit, measuring 5½" long, 3⅛" high and 3" wide is made up of two thick porcelain end plates and, between them, a porcelain spacer bar and 73 coated porcelain rods. Gases flow across the rods, each tear-drop in cross-section so as not to disturb the flow. The combustion occurs at the surface of the rods where they are coated with a .003 inch film of the catalytic agent—the catalytic alumina and platinum alloy.

Two years ago, Sun installed the same

catalyst in its Marcus Hook fleet of 18 fork-lift trucks. In a muffler installation, the catalyst burns carbon monoxide and other noxious fumes produced by the truck engine and converts them to harmless carbon dioxide and water vapor. This permits the trucks to be operated



The oxidizing catalytic unit. The rods, unfinished here, will be coated with a catalytic agent of alumina and platinum alloy. Combustion of waste gases occurs at these coated surfaces.

indoors with complete safety, it is stated.

Initial success of the catalyst was in the metal coating industry at Enamel-strip Corporation, Allentown, Pa. Enamelstrip cut its fuel bill 90% and solved a nasty air pollution problem at the same time. Instead of being vented into the atmosphere, noxious solvent fumes are converted into heat which is used to bake enamel on metals in a continuous operation.

ness. The Industry had the benefit of the advice and assistance of Professor Edwin Boyan of the Massachusetts Institute of Technology in connection with these tests.

This revised schedule will provide an efficient blade for every metal cutting need. It also will effect economies through shorter inventories and faster turnover, and in time of national emergency will speed production.

The British Hack Saw Blade Manufacturers have collaborated in these studies and have adopted this revised schedule with the exception of a few additional sizes necessary to serve foreign made machines. These additional British sizes also follow the twenty-to-one formula.

This revised American-British-Canadian Standardization Program is under study by blade manufacturers of France, Germany and Sweden, and the present indications are that it will be adopted as standard by the manufacturers of these countries.

# Best Buy

## ...Here's Why!



*Always first*

AEROQUIP FLEXIBLE HOSE LINES OUTSELL ALL OTHERS  
FOR INDUSTRIAL AND AIRCRAFT APPLICATIONS

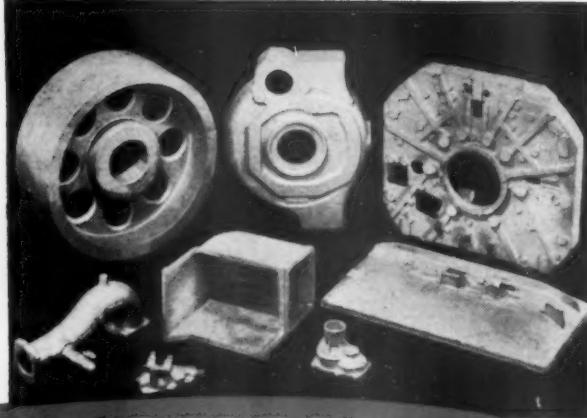
**Aeroquip**  
REG. TRADE MARK

**AEROQUIP CORPORATION, JACKSON, MICHIGAN**

SALES OFFICES: BURBANK, CALIF. • DAYTON, OHIO • HAGERSTOWN, MD. • HIGH POINT, N.C. • MIAMI SPRINGS, FLA.  
MINNEAPOLIS, MINN. • PORTLAND, ORE. • WICHITA, KAN. • TORONTO, CANADA

AEROQUIP PRODUCTS ARE FULLY PROTECTED BY PATENTS IN U.S.A. AND ABROAD

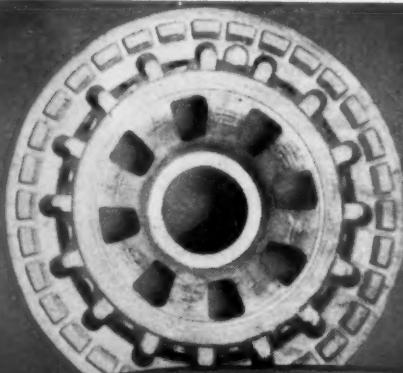
\*Well-Cast



## COMMERCIAL LIGHTWEIGHT CASTINGS

Your commercial requirements for lightweight castings in aluminum or magnesium may be tough, but we'd welcome an opportunity to look them over. We've tackled a good many diversified casting problems over almost a half century.

Our four completely equipped plants and their trained personnel are at your disposal.



## MILITARY LIGHTWEIGHT CASTINGS

Aircraft wheels, strut parts, engine parts and miscellaneous components are being made every day at our plants, in aluminum and magnesium. X-Ray inspection, close attention to detail, complete facilities for production in sand, semi-permanent and permanent mold form.

**Well-Made Wood and Metal Patterns.  
Well-Cast Ampco Bronze Castings.**

\*Copyrighted Trade Name.

If you would like to receive the Wellman Magazine each month without charge, drop us a note on your business letterhead.

**THE WELLMAN BRONZE & ALUMINUM CO.**

DEPT.17, 12800 SHAKER BLVD., CLEVELAND 20, OHIO

### INDUSTRY EXPANDS AT UNPARALLELED PACE

Since the close of World War II, industrial expansion in America has proceeded at a pace unparalleled in history, according to a study on trends in industrial location recently completed by the National Industrial Conference Board, 247 Park Avenue, New York, N. Y. This growth, the Board states, has been accompanied by several important changes in the country's dispersion of industry.

Fourteen hundred and forty-six separate plants are operated by the 138 companies which provided information for the report. "This amounts to about 11 factories per company. And the co-operating executives report a total of 614 additions to capacity in the period 1946-951—which means that on the average each company had more than four expansion projects in a period of just six years."

Prior to the Second World War about 60% of the factories of companies co-operating in a 1948 Conference Board survey were centered east of the Mississippi and north of the Mason-Dixon line. "The southern states accounted for less than one fourth of the cooperators' industrial plants, while only one tenth were located in the West".

The advent of the war "caused some changes in the traditional picture." New England, the Middle Atlantic and East north central states "lost ground from their pre-war position. The southern and western states, on the other hand, each increased their shares of reported industrial activity at the expense of the older Northeast."

According to the study "The West is still growing more rapidly than any other portion of the country. And the New England-Middle Atlantic area is still losing out. While the South appears to have dropped in national importance, so far as new or acquired facilities are concerned, the North central states have increased their rates of growth appreciably. And the trend toward the smaller towns, which was established during the war, has leveled off."

California, with 9.8% of the reported expansion projects, received more expansions since the war than any other state in the Union, cooperating companies indicated. Ohio, with 9.5% was a close second, while New York, Illinois, Pennsylvania, Texas, and Michigan also ranked high.

On a regional basis the north central states were outstanding. More than one third of the reported expansions were located in the dozen states comprising the area. The northeastern and southern regions each accounted for about one fourth of the national total, while the western states received about 15% of the reported expansions—a 5.3% rise in their share of the reported national total since the end of the war.

The study, "Trends in Industrial Location" is No. 59 of the "Studies in Business Policy" prepared by the Board.

# "Air horses" for lifesaving over the sea



Powered to win any race with disaster . . . utterly reliable for mercy missions over treacherous waters . . . the 1425-h.p. engine for air-sea triphibians is a marvel of modern precision engineering. To help swell volume production of this Wright Cyclone engine, Curtiss-Wright and the U. S. Air Force rely on the skill and resourcefulness of Lycoming.

Lycoming stands ready to assist you—whether you have "just an idea" that needs development, a problem in the blueprint stage, or a finished metal product that needs speedy, precise fabrication. Long famous in the metal-working field, Lycoming continues to meet the most exacting and diverse requirements, both industrial and military. *Whatever your problem—look to Lycoming!*

**Lycoming's wealth of creative engineering ability,**  
its 2½-million feet of floor space, its more than 6,000  
machine tools stand ready to serve your needs.

AIR-COOLED ENGINES FOR AIRCRAFT AND INDUSTRIAL USES • PRECISION-AND-VOLUME MACHINE PARTS • GRAY-IRON CASTINGS • STEEL-PLATE FABRICATION

LOOK TO

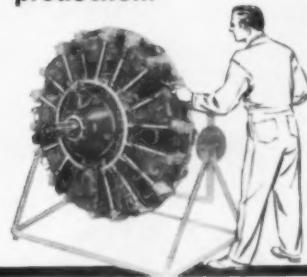
**LYCOMING** FOR RESEARCH  
FOR PRECISION PRODUCTION

LYCOMING-SPENCER DIVISION  
BRIDGEPORT-LYCOMING DIVISION



WILLIAMSPORT, PA.  
STRATFORD, CONN.

To power a plane with dependable "horses"—mighty engines for hazardous air-sea rescue work—the Air Force looks to Lycoming for precision production.



Bridgeport-Lycoming Division  
AVCO Manufacturing Corp.  
Stratford, Conn.

Please send me further information on Lycoming's varied abilities and facilities.

Name \_\_\_\_\_

Firm \_\_\_\_\_ Title \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_

**the tougher the cutting job . . .  
the better the opportunity for . . .**

# *Abrasive Cutting*



We question the judgment of G. I. Joe, but even the General knows that Allison Wheels cut rings around competition. Fact is, whatever the material or the conditions, there's an Allison Abrasive Wheel that does a more economical and efficient cutting job. Steel, non-ferrous metals, bar stock, tubing . . . whatever it is, Allison Wheels cut cleanly at high speeds.

For complete information on wet or dry cutting, ask Allison . . . specialists in abrasive cutting for 30 years.

**Allison**  
ABRASIVE CUTTING WHEELS

THE *best* WAY TO CUT MANY MATERIALS

THE *only* WAY TO CUT SOME

**SEND FOR THIS HELPFUL BOOK ON ABRASIVE CUTTING**



**THE ALLISON COMPANY**

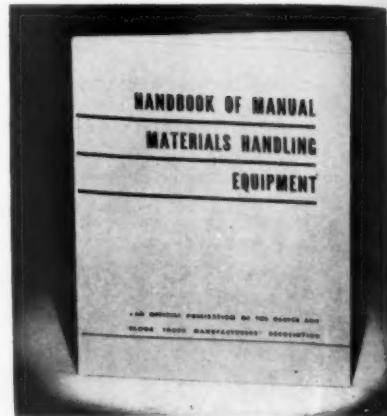
**259 Island Brook Ave., Bridgeport 8, Conn.**

Please send me your free booklet on Abrasive Cutting:

**NAME:** \_\_\_\_\_

## HANDBOOK OF MATERIALS HANDLING EQUIPMENT

The Caster and Floor Truck Manufacturers' Assn., made up of the principal manufacturers of industrial wheels, casters, hand and floor trucks and other basic materials handling equipment, announces publication of a new Handbook of Manual Materials Handling Equipment. The manual, which sells for \$1.00,



and is available from association headquarters at 27 East Monroe St., Chicago, Ill., is organized into five chapters covering industrial wheels, casters, two wheel hand trucks, industrial platform trucks and trailers, pallets and skids. The manual was prepared by the Product and Research Committee of the Association. It tells how the respective types of equipment can be used to best advantage in specific applications.

## NEW RLM SPECIFICATIONS INDUSTRIAL LIGHTING STANDARDS

Copies of the recently published 1932 Edition of the RLM Standard Specifications covering industrial lighting equipment, are available without cost to industrial executives, purchasing agents, consulting engineers, maintenance chiefs and others. It is published by the RLM Standards Institute, 326 W. Madison Street, Chicago 6, Ill. The 44-page Specifications Book contains detailed specifications for 18 of the most commonly employed incandescent and fluorescent industrial lighting units.

Due to the increased employment of high-mounting units for high-bay industrial installations, the Institute has established two new specifications covering such units. The first is RLM Standard Specification No. 4 for RLM High-Mounting Porcelain Enameled Reflectors. The second is RLM Standard Specification No. 40 for RLM High-Mounting Aluminum Reflectors. These two new specifications take the place of former standard specifications 19 and 20 for concentrating and spread-distribution aluminum reflectors.

Also, the book shows important revisions and clarifications of existing specifications, and new tables of typical coefficients of utilization and light distribution curves.



No, he doesn't know  
them all like a book...  
but...

there's one phase of virtually every business which Lyon Steel Equipment Dealers know "from cover to cover." That phase has to do with helping their customers make the most out of steel equipment in terms of savings in time, labor and money.

A highly diversified line of more than 1500 standard Lyon items enables Lyon Dealers to meet the varying needs of business, industry and institutions—*better*. A very few typical products are shown below.

*Lyon also has facilities for special contract work.*

FACTORIES IN . . . AURORA, ILL., AND YORK, PA.

### LYON METAL PRODUCTS, INCORPORATED

General Offices: 133 Monroe Avenue, Aurora, Illinois

Sold Nationally Through Dealers and Branch Offices

# LYON

## STEEL EQUIPMENT

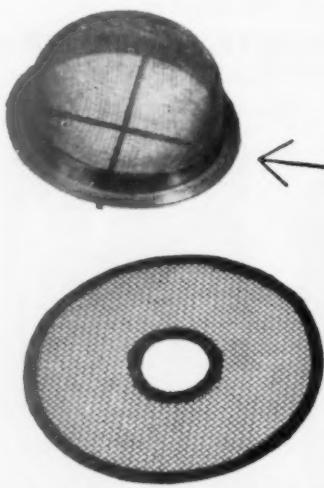


#### A PARTIAL LIST OF LYON STANDARD PRODUCTS

- |             |                    |               |                        |                     |                   |                 |               |
|-------------|--------------------|---------------|------------------------|---------------------|-------------------|-----------------|---------------|
| • Shelving  | • Kitchen Cabinets | • Tool Totes  | • Economy Locker Racks | • Display Equipment | • Filing Cabinets | • Service Carts | • Tool Stands |
| • Lockers   | • Cabinet Benches  | • Bar Racks   | • New Freedom Kitchens | • Flat Drawer Files | • Folding Chairs  | • Sorting Files | • Shop Boxes  |
| • Stools    | • Storage Cabinets | • Tool Boxes  | • Toolroom Equipment   | • Revolving Bins    | • Work Benches    | • Drawer Units  | • Tool Trays  |
| • Bin Units | • Drawing Tables   | • Parts Cases | • Wood Working Benches | • Hanging Cabinets  | • Bench Drawers   | • Hopper Bins   | • Shop Desks  |

# NEWARK Fabricated Wire Cloth Parts

Wide Range  
in Sizes and  
Shapes



Wide Range  
in Wire Cloth  
Meshes

## FORECASTS FOUR-FOLD BOOST IN ELECTRIC POWER CAPACITY

By 1964 available electric power in the United States will have increased four times over what we had at the beginning of World War II, predicted A. A. Johnson, electric utilities engineering manager for Westinghouse Electric Corporation, at the recent Centennial of Engineering in Chicago.

Addressing the American Institute of Electrical Engineers, Mr. Johnson forecast an installed electric power generating capacity by 1964 of 160 million kilowatts. Today, he said, the figure stands at 80 million kilowatts—more than one-half of the world's energy output. Installed capacity is expected to increase about seven percent per year, thus doubling again in the next 10 years. Looking further into the future, no indication of saturation is in sight. In 20 years, the installed generating capacity probably will exceed 250 million kilowatts.

The art of electric power generation, Mr. Johnson continued, still has not reached its peak, as is indicated by the rapid rise in the size of turbine generators. Whereas several years back the largest high-speed generator was rated at 125,000 kilowatts, units of 250,000 kilowatts now are on order.

"Each time a size limitation has been approached, the engineers have come forward with a development that pushes back the barrier," the Westinghouse executive said. "The most recent was the introduction about a year ago of a new cooling method that increased the amount of kilowatts that can be produced from a given amount of iron and copper by 25 percent." With this "hollow coil" cooling technique, Mr. Johnson added, it will be possible to build turbine generators of 300,000 kilowatts and still not exceed shipping limitations which appear to set the ultimate limit.

## MARCH OF DIMES



We have the facilities and skilled workers to make a great variety of wire cloth parts. We're doing a lot of work along these lines. We do the assembling in our own plant, using our own well known "Newark" Cloth. We bring to this work experience gained by several generations of wire cloth manufacturing and many years experience in fabricating and assembling parts. We'll be glad to quote on your next requirements. If you would like suggestions as to how best make use of wire cloth in the assembling we'll be glad to help. Send us an outline or print of your problem.

NEWARK  
for ACCURACY

Newark Wire Cloth  
COMPANY

351 VERONA AVENUE • NEWARK 4, NEW JERSEY

Philadelphia 3, Penna. San Francisco, Calif. Chicago, Ill. New Orleans, La. Los Angeles, Calif. Houston, Texas  
1311 Widener Bldg. 3100 19th St. 20 N. Wacker Dr. 520 Maritime Bldg. 1400 Se. Alameda St. P. O. Box 1970

JANUARY 2-31

**New Beauty.** Knife handles molded of hard, heat-resistant Melmac make a handsome set. Molded by Briddell.

**New shapes.** Break-resistant Melmac makes a modern butter dish that's as practical as it is good-looking. Molded by Boonton.

**New features.** Individual beverage server with molded Melmac lining keeps liquids hot or cold. Molded by Landers, Frary & Clark.



**new beauty...**

**new shapes...new features...**

**mold them into your new products with Melmac®**

Look at the counter-clearing sales advantages you build into your products when you make them of MELMAC molding material:

- Through and through color that won't fade, crack, chip, peel, flake.
- Structural resistance to breaking, chipping, cracking.
- Light weight, with the quality "feel" of much heavier materials.
- Easy cleaning, handling, storage.
- Resistance to heat, moisture, corrosion.

And you profit from these manufacturing benefits:

- Easy molding in almost any shape.
- Economics that go with built-in color.
- Economics from elimination of subsequent drilling, tapping, etc.
- Easy handling, shipping...lower shipping costs.

Any wonder that more and more manufacturers plan their new numbers with MELMAC in mind?



Write for this free booklet. Find out how 30 leading housewares manufacturers built more "sell" into their products with Cyanamid's plastics. Many of these 30 illustrated case histories may throw new light on *your* problems. Be sure to write for your free copy of "In Housewares Alone . . . 30 More Manufacturers Swing to Cyanamid Plastics."

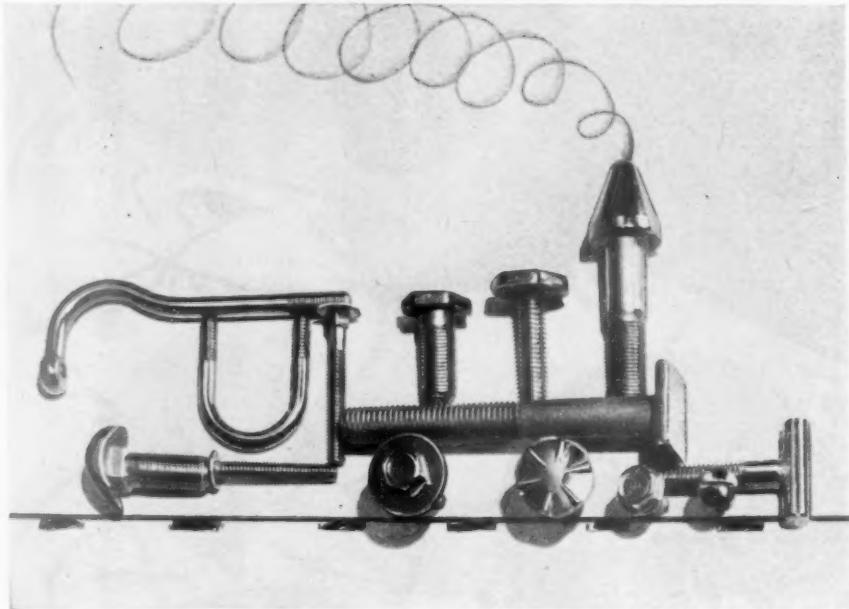


**AMERICAN Cyanamid COMPANY**  
PLASTICS DEPARTMENT

33C Rockefeller Plaza, New York 20, N. Y.

In Canada: North American Cyanamid Limited,  
Royal Bank Building, Toronto, Ontario, Canada

# Get on the right track for SPECIAL BOLTS!



● Take a tip from leading concerns which have found the answer to their fastener problems in specially designed Circle B bolts. They are producing better designed, stronger products, with more sales appeal, faster . . . and getting them often at considerable savings in time and money.

● We are equipped to help you realize these and other advantages. You can get on the right track by writing for complete details pertaining to your individual requirements.



## BUFFALO BOLT COMPANY

Division of Buffalo-Eclipse Corporation

North Tonawanda, N. Y.

Sales Offices in Principal Cities

PRODUCERS OF CIRCLE B PRODUCTS — BOLTS • NUTS • RIVETS AND SPECIAL FASTENERS

### PLASTIC DIE USED TO SHAPE STEEL AUTOMOTIVE PANELS

For the first time in the automotive industry, a die made of plastic material rather than customary high alloy steel is being used successfully by Chrysler Corporation, Detroit, Mich., in actual factory production to shape major steel panels for Dodge trucks.

Disclosure of this unique automotive production development was made known by H. L. Weckler, vice president and general manager of Chrysler Corporation.

Mr. Weckler said production tests are being conducted at the company's Nine Mile Press Plant in Detroit, where a standard 100-ton press, with a draw die made of plastic instead of steel, already has turned out several hundred steel cowl panels for the Dodge Truck Division.



Steel cowl panels for Dodge trucks are stacked after being formed by a plastic die in a 100-ton press.

Plastic comprising the experimental production die weighs less than 1,500 pounds, he said, compared with 6,000 pounds of steel required for the customary die.

The plastic used in the casting of the dies, Mr. Weckler explained, is a thermosetting liquid phenolic material which had previously been used successfully by the aircraft industry to stamp some aluminum and stainless steel airplane parts. Because of the high impact resistance required of a die in forming steel, it was necessary to place the plastic die in a boxing fabricated of boiler plate.

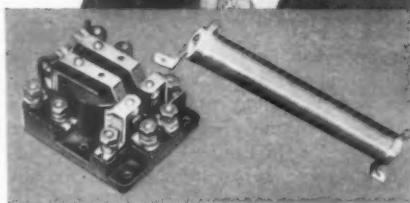
Besides an indicated saving in initial die cost, use of plastic dies promises an even more important economy in time for certain production operations, Mr. Weckler said. For example, the test die was produced in less than three weeks, compared with 14 to 16 weeks normally required to make a comparable steel die. No machining of the die was required after it was formed.

One half of the plastic die was formed by pouring cold liquid plastic into a plaster mold of the truck cowl side panel. After being coated with wax to simulate the thickness of the finished steel piece, this same mold was used to cast the second half of the die. Because the plastic material generates its own heat, hardening of the die was accomplished through its own chemical reaction. Curing of the die required less than 24 hours' exposure to the heat from infra-red lamps.

## Potter Instrument Company, Inc.

*"The 'Flying Typewriter' and all electronic counters require electric components that are rugged and reliable"*

says Jack Leight, Sales Engineer,  
Ward Leonard Electric Company,  
Mount Vernon, New York



The "Flying Typewriter" is a revolutionary new high-speed electronic printer for data handling, communications, and computing. Developed by the Potter Instrument Company, Inc., Great Neck, New York, it is capable of printing 24,000 characters a minute "on the fly" from a continuously revolving type wheel.

Coupled to an electronic storage or memory unit, the machine first interprets, then prints in familiar typed lines, information taken in coded form from magnetic tape and punched cards or transmitted over narrow channel radio link, telephone and telegraph lines. The entire alphabet, numerals, punctuation and other special symbols are used in printing 300 lines per minute.

Such speed and accuracy in a machine require reliable, rugged electric components. That is why the Potter Instrument Company uses Ward Leonard VITROHM resistors and relays in the electronic counters for the "Flying Typewriter" as well as in the many other types of high-speed electronic counters manufactured by them.

The trouble-free operation of Ward Leonard controls also eliminates many costly and time-consuming repairs which would have to be made by skilled electronic specialists.

Ward Leonard is always ready to put its staff of application engineers to work with you regarding any electrical control.

### DISTRICT OFFICES AND REPRESENTATIVES

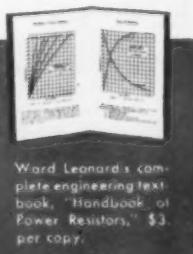
Atlanta 5, Georgia	C. B. Rogers and Associates
Baltimore 18, Md.	Durling Electric Co.
Charlotte 1, N. C.	James L. Highsmith & Co.
Chicago 4, Illinois	Ward Leonard Electric Co.
Cincinnati 2, Ohio	Sheldon Storer and Assoc.
Cleveland 14, Ohio	The Ambos-Jones Co.
Corpus Christi, Texas	Brance-Krachy Co., Inc.
Denver 2, Colorado	Mark G. Mueller
Detroit 21, Michigan	Jesse W. Eakins Co.
Hartford 6, Conn.	Ward Leonard Electric Co.
Houston 1, Texas	Brance-Krachy Co., Inc.
Kansas City 2, Mo.	Maury E. Bettis Co.
Knoxville, Tennessee	John G. Pettyjohn
Los Angeles 13, Calif.	Ward Leonard Electric Co.
Memphis 3, Tenn.	E. E. Torkell
Minneapolis 5, Minn.	Marvin H. Kirkeby
Newark 2, N. J.	Ward Leonard Electric Co.
New Orleans 13, La.	Electron Engineering Co.
Philadelphia 2, Pa.	Ward Leonard Electric Co.
Pittsburgh 16, Pa.	W. A. Bittner
Roanoke, Virginia	Lynn H. Morris
Rochester 7, N. Y.	Ward Leonard Electric Co.
St. Louis 10, Mo.	Ward Leonard Electric Co.
Salt Lake City 1, Utah	Leonard M. Slusser
San Antonio, Texas	Brance-Krachy Co., Inc.
San Francisco 3, Calif.	L. F. Church Co.
Seattle 4, Wash.	Northwestern Agencies, Inc.
Tucson, Arizona	Central Station Equipment Co.

### CANADA

Edmonton, Alta.	D. M. Fraser, Ltd.
Halifax, N. S.	D. M. Fraser, Ltd.
Montreal 25, P. Q.	D. M. Fraser, Ltd.
Toronto 1, Ont.	D. M. Fraser, Ltd.
Vancouver, B. C.	D. M. Fraser, Ltd.
Winnipeg, Man.	D. M. Fraser, Ltd.

### EXPORT

New York 4, N. Y. | Ad. Auriemo, Inc.



Ward Leonard's complete engineering text-book, "Handbook of Power Resistors," \$3. per copy.



**WARD LEONARD**  
**ELECTRIC COMPANY**

MOUNT VERNON, NEW YORK



RHEOSTATS



RELAYS



MOTOR CONTROLS



CHROMASTER

Result-Engineered Controls Since 1892

## *Sales Tips from Industrial Purchasing Agents*



"We appreciate the salesman who conserves his own time and ours by carefully planning his calls so that the interview may be as brief as possible consistent with being complete and fully informative. The successful salesman must know his products thoroughly, and he must know their application to our business. Further, he is most valuable to us, and consequently to his own company, when he makes it a practice to maintain a sustained interest in our order until shipment has been satisfactorily completed," says R. N. Chapin, General Purchasing Agent, Air Reduction Co., Inc., New York, N. Y.



"The diversity of production and the rapidity of change because of never-ending scientific development make the procurement job for our eleven product divisions a most complex one. We look to salesmen who contact us to keep abreast of our current problems and be of real help in their solution. Our policy of relying heavily on the counsel of our well established suppliers has proven beneficial both from the viewpoint of our company and the companies who serve us," says George C. Mercer, Director of Purchasing, P. R. Mallory & Co., Inc., Indianapolis, Ind.



"Salesmanship is not only a requisite of successful selling; it should be practiced by the buyer as well. Friendliness and understanding of each other's problems are important factors in the conduct of business today. Good will is an asset of great value, and its promotion by both buyer and salesman should constantly be kept in mind. During periods when many commodities are in short supply, salesmen have the opportunity of building good will by extending their efforts to insure delivery of goods on time," says L. D. Brettell, Purchasing Agent, Copperweld Steel Co., Glassport, Pa.

## **Product acceptance is decided by men like these— 38,500\* of them read PURCHASING**

Industrial Purchasing Agents must have detailed product information. They base their decisions on all the facts they can gather — the merits of the product itself . . . how it fits into the production and engineering needs of their own company . . . how reliable is the source of supply.

Your advertising works hand in hand with your direct selling to give the PA the facts he needs to do his job — the facts about *your* product. Make sure your advertising message reaches him! Use PURCHASING — the *one* magazine read regularly by industrial buyers — *the basic magazine on any industrial advertising schedule!* PURCHASING, 205 East 42nd Street, New York 17, N. Y. Offices in Chicago, Cleveland, Dallas, Atlanta, Los Angeles.

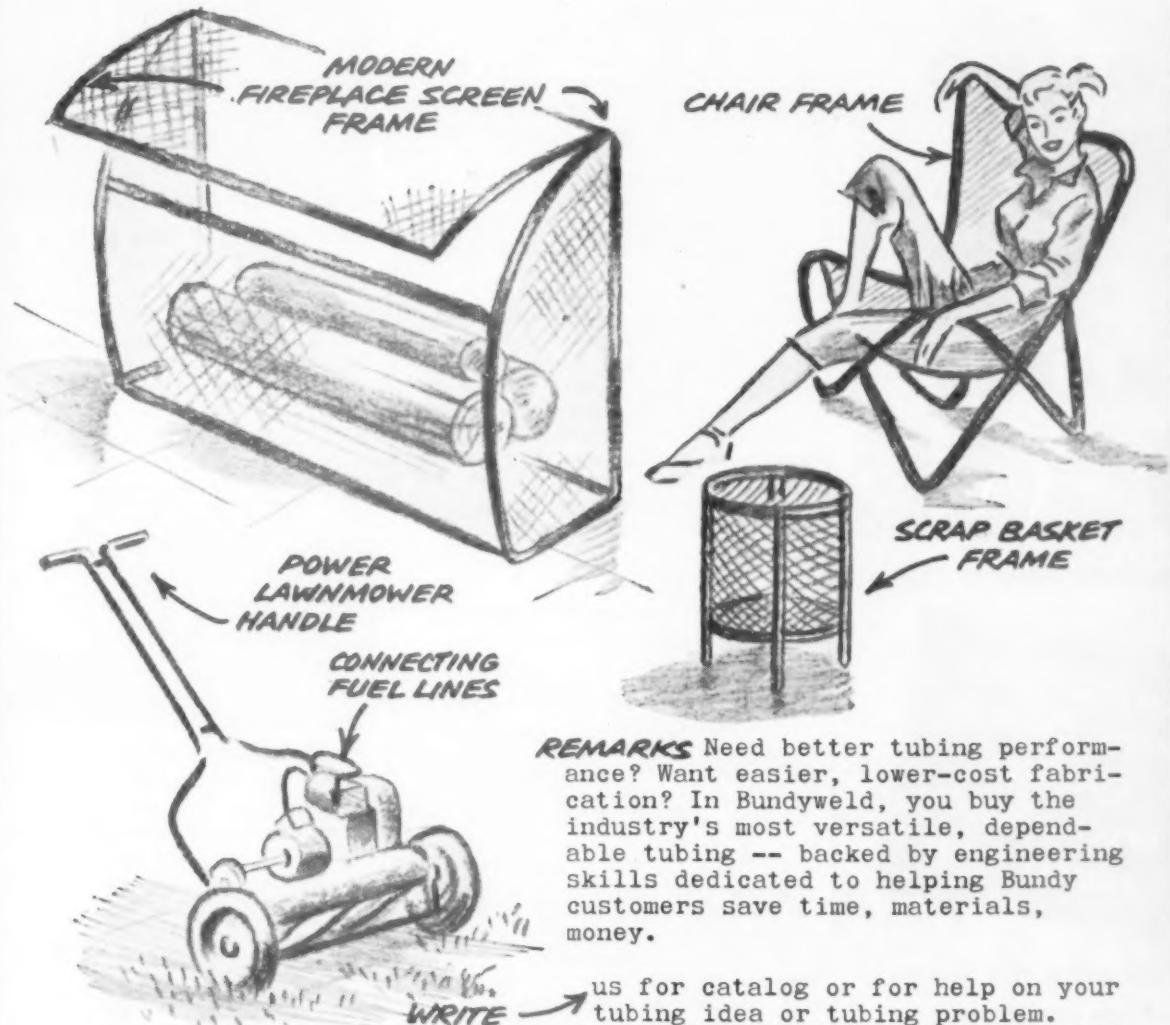
\*Based on survey, copy on request.

*When you think of  
selling...think of  
PURCHASING*



**The basic magazine on any industrial advertising schedule!**

FROM *the Bundy Sketchbook*  
TO *jog a designer's imagination*



**REMARKS** Need better tubing performance? Want easier, lower-cost fabrication? In Bundyweld, you buy the industry's most versatile, dependable tubing -- backed by engineering skills dedicated to helping Bundy customers save time, materials, money.

us for catalog or for help on your tubing idea or tubing problem.  
**BUNDY TUBING CO., DETROIT 14, MICH.**

# Bundyweld Tubing

® DOUBLE-WALLED FROM A SINGLE STRIP

## WHY BUNDYWELD IS BETTER TUBING



Bundyweld starts as a single strip of copper-coated steel. Then it's . . .



continuously rolled twice around laterally into a tube of uniform thickness, and



passed through a furnace. Copper coating fuses with steel. Result . . .



Bundyweld, double-walled and brazed through 360° of wall contact.

Leakproof  
High thermal conductivity  
High bursting point  
High endurance limit  
Extra-strong  
Shock-resistant  
Ductile

Lightweight  
Machines easily  
Takes plastic coating  
Scale-free  
Bright and clean  
No inside bead  
Uniform I.D., O.D.



NOTE the exclusive patented Bundyweld beveled edges, which afford a smoother joint, absence of bead and less chance for any leakage.

Bundy Tubing Distributors and Representatives: Cambridge, 42, Mass.: Austin-Hastings Co., Inc., 226 Binney St. • Chattanooga 2, Tenn.: Pearson-Deakin Co., 823-824 Chattanooga Bank Bldg. • Chicago 32, Ill.: Lapham Hickey Co., 3333 W. 47th Place • Elizabeth, New Jersey: A. B. Murray Co., Inc., Post Office Box 476 • Philadelphia 3, Penn.: Rutan & Co., 1717 Sansom St. • San Francisco 10, Calif.: Pacific Metals Co., Ltd., 3100 19th St. • Seattle 4, Wash.: Eagle Metals Co., 4755 First Ave., South Toronto 5, Ontario, Canada: Alloy Metal Sales, Ltd., 181 Fleet St., E. • Bundyweld nickel and Monel tubing is sold by distributors of nickel and nickel alloys in principal cities.



**ROUND  
FLAT  
OR  
SHAPED  
PAGE**  
*makes them all...*

**LOW CARBON  
HIGH CARBON  
STAINLESS  
SPECIAL ALLOY  
ARMCO IRON**

**YOU draw the Shape  
—Page can draw  
the Wire**

Tell us the way you want it. We'll follow your specifications.

Cross-sectional areas up to .250" square; widths up to  $\frac{3}{8}$ "; width-to-thickness ratio not to exceed 6 to 1.

**Wire or  
Write Today**

**PAGE  
WIRE**

**ACCO**



PAGE STEEL AND WIRE DIVISION  
AMERICAN CHAIN & CABLE

Monessen, Pa., Atlanta, Chicago, Denver, Detroit,  
Los Angeles, New York, Philadelphia,  
Portland, San Francisco, Bridgeport, Conn.

**ANNOUNCE BO APPROVAL OF  
HIGH TENSION IGNITION CABLE**

Announcement of Bureau of Ordnance approval for General Electric's insulated, high-tension ignition cable under Specification MIL-C-3162 as Type 1 Grade C, Class 2 has been made by the company's Wire and Cable Department, Bridgeport, Conn.

This cable, which is used for ignition systems of internal combustion engines in aircraft, automotive vehicles, and marine service, has a temperature range of 250 F to minus 65 F, and must remain flexible even under the severe cold conditions encountered by modern, high-altitude flying ships.

This approval, believed to be the first for Grade C of this specification type and class also includes approval for Grade A and is in addition to the Bureau of Ordnance approvals under which the company has been manufacturing ignition cable in accordance with Type 1, Grade B, Class 2 specifications.

The new cable has a stainless steel conductor with a synthetic rubber insulation. Over the insulation is a glass-reinforcing braid and an overall low-temperature sheath. The cable is available in 5 mm size.

• • •

**TEXACO LIBRARIAN AUTHORS  
NEW SURVEY OF FATTY OILS**

Publication of an authoritative survey which covers its field in exhaustive detail—"Properties of the Principal Fats, Fatty Oils, Waxes, Fatty Acids and their Salts" (244 pages, 8½ x 11)—has been announced by The Texas Company. The author of the new book is M. P. Doss, Technical Librarian of The Texas Company, who previously published a compilation—"The Physical Constants of the Principal Hydrocarbons"—which was adopted by the Technical Advisory Committee of the Petroleum Administration for War as its official standard during World War II.

The new book should be of considerable interest to the fatty oil, petroleum, and chemical industries, and especially to manufacturers of lubricants. In its 244 pages the new publication covers the properties of approximately 50 of the principal fats, fatty oils, and waxes. Doss surveys only aliphatic acids, but he tabulates the properties of more than 800 of these.

The unique part of the book is the data given on the salts of the fatty acids ranging from aluminum through zirconium. Approximately 1,750 salts are listed. This material has never previously been brought together.

The book is the result of ten years' intensive search through published and unpublished data and literature. The scope of this search is indicated in the fact that Doss lists more than 1,350 literature references. The book concludes with a variety of pertinent conversion tables.

It is now available for purchase from the Technical and Research Division of The Texas Company, 135 East 42nd Street, New York 17, N. Y.

**how two  
companies  
cut packing  
costs**

**Read this if you ship in corrugated or fibre cartons!**  
It tells how two well known manufacturers cut packing costs . . . by thousands of dollars annually . . . with International Carton-Stapling Machines. Here's the story:



**'28,000 saved** by Harrison Steel Cabinet Co., manufacturers of kitchen wall, base and sink cabinets. Harrison improved working conditions . . . doubled production.



**'20,000 saved** by Uarco, Inc., manufacturers of business forms. Closing 2,500 cartons formerly took 48 man-hours . . . now it takes 12 man-hours.

**40 models...from portable units to big multi-head automatic models. Write for details.**

**INTERNATIONAL  
STAPLING MACHINES**  
INTERNATIONAL STAPLE  
& MACHINE COMPANY  
804 E. Herrin St., Herrin, Illinois

RIGHT IN YOUR OWN BACK YARD...

BY WEST

EVERYBODY ON THE PANEL HITS THE JACKPOT WHEN HUGH GUESIT TRIES TO SLIP OVER A FAST ONE ON FLOOR CARE.

DON'T LET THIS FLOOR YA, FELLAS! MR. I. WANNAKNOW ASKS, "DOES THE WEST FLOOR PRESERVATION PROGRAM WORK FOR ALL TYPES OF FLOORS."



## New floors cost \$300,000,000 a year!

TYPE OF FLOOR	INSTALLED COST* OF 50,000 SQ. FT.
Asphalt Tile	\$15,000
Concrete	18,000
Linoleum	21,000
Hardwood	27,500
Cork	39,000
Rubber Tile	44,000
Vinyl Tile	44,000
Ceramic Tile	65,000
Terrazzo & Mosaic	87,500
Marble	300,000

\*Based on reports of reliable flooring contractors in urban areas.

How much will it cost you to replace worn-out floors today? The chart gives you some idea.

But, your floors *don't have* to wear out. They can be protected almost indefinitely.

How? With West's simple, proven FLOOR PRESERVATION PLAN. (1) Cleaning — remove all dirt without harming floors (2) Sealing — fill the pores. Provide a protective coating (3) Maintaining — put on a tough, anti-slip floor wax.

The West Plan offers you more than 20 proven products. A West Floor Specialist will be glad to help you select the program or product you need.



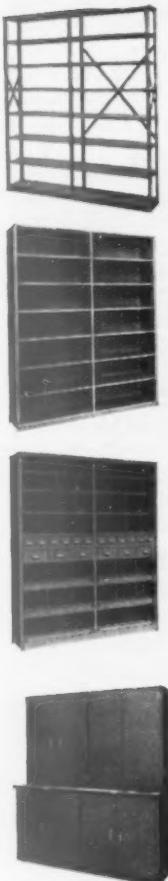
42-16 West Street, Long Island City 1, N. Y.  
Visit us at the PLANT MAINTENANCE SHOW —  
CLEVELAND Jan. 19-22 Booth #501

Please send FREE booklet "Proper Care of Floors"

DEPT. 2

Name \_\_\_\_\_ Title \_\_\_\_\_  
Company \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_

**The real cost of shelving  
is the erected cost**



**How to  
save  
money  
on  
steel  
shelving**

**DeLuxe shelving costs you less. DeLuxe precision shelving has fewer parts, uses 80% less bolts and is the only shelving available that is 100% adjustable. It's quicker, less costly to install—easier to adjust.**

**Wherever you are, a DeLuxe factory representative is available to give you a complete engineering, planning and layout service without obligation.**

**Write for a free catalog now,  
while your mind is on shelving.**



**DeLuxe Metal Furniture Co.  
309 Struthers St., Warren, Pa.**

**For over 25 Years Manufacturers of:  
Storage Shelving • Library Shelving  
Storage Cabinets • Shop Equipment**

**EXPLOSION-PROOF SPEAKER  
HOUSINGS ANNOUNCED BY  
RCA VICTOR**

An explosion-proof speaker housing for use in hazardous locations where explosive gases and vapors are present, is being introduced by the sound products section of RCA Victor Division, Radio Corporation of America. The new housing is approved by Underwriters Laboratories, Inc., and is sufficiently strong to withstand an internal gas explosion. It is made of heavy cast aluminum, and is 8 inches in diameter, 7-5/8" high, and has a net weight of 4 1/4 pounds.

**AIM TO PROTECT BUYERS OF  
IMPORTED MACHINE TOOLS**

Protection of American industrial purchasers against unscrupulous practices of some machine tool importers is the objective of ten-point code of ethics designed to curb abuses in the business, adopted by the American Association of Machinery Importers, Inc., 115 Broadway, New York.

Milton D. Thalberg, president of the association, says that typical of the abuses is the sale of foreign made machines for which repair parts are not available in this country; another example is the supplying of equipment with calibrations in the metric system.

The policy is established of having machine tools turned out for the American market calibrated in English rather than the metric system. Suppliers must stock spare parts, and supply operating manuals printed in English. Importers will refuse to deal with manufacturers unless assured of prompt supply of spare parts and technical service whenever necessary.

The code also stipulates that no member will require a customer to purchase one machine as a condition of obtaining another. Moreover, each A.A.M.I. member is bound under the code to provide with each piece of equipment sold a supplier's guarantee of workmanship and materials. Also, members are committed to refrain from dealing with suppliers or countries deemed by the United States Government to be unfriendly nations. Members will endeavor to standardize trade practices and to avoid confusion among purchasers unfamiliar with import procedures, by quoting prices FOB dock, duty paid, U. S. Port, unless requested otherwise by the customer.

**CLEANING ALUMINUM EXPOSED  
TO ATMOSPHERE**

What is the best material and method for cleaning aluminum surfaces that have become dirty from exposure to the atmosphere? Scrub well with a cloth or brush, using lava soap, advises the Reynolds Aluminum Company. Tests have shown this works excellently where aluminum is exposed to the atmosphere of our cities. The entire United Nations Building in New York is being cleaned with lava soap. To retain cleanliness for maximum period after washing, apply wax and polish with a dry cloth.

**Complete Information  
for the  
INDUSTRIAL BUYER**



**Thousands of  
Industrial Buyers  
Prefer This Directory**

With only the industrial buyer in mind, CONOVER-MAST PURCHASING DIRECTORY carries only listings and product facts on the equipment, parts, supplies, and materials needed by industry. Rigidly excluding all nonindustrial listings and advertisements, the Directory is kept compact—it is easy to keep handy and use, yet it is complete. Besides, it has 35 pages of useful information and tables for the buyer which he will not find in other directories.

Use the CONOVER-MAST PURCHASING DIRECTORY—you'll soon find that the complete cross references make it the easiest and quickest way to locate the suppliers of any item you buy. The more you use it, the better you'll like it.

**The Most Convenient  
Industrial Buyers' Guide for  
Production, Purchasing, and  
Engineering Executives.**

**Conover-Mast  
PURCHASING  
DIRECTORY  
737 N. Michigan Ave., Chicago 11, Ill.**

48 Superduty  $\frac{1}{4}$ " Models—8 speeds, from 500 to 5000 R.P.M. Choice of pistol or saw-type grip.



3 Superduty  $\frac{3}{8}$ " Models, 400 to 1000 R.P.M.

3 Superduty  $\frac{1}{2}$ " Models, 500 to 600 R.P.M.

One or more of these PET Superduty Models will EXACTLY meet any drill user's needs!

**PET**  
POWER TOOLS

## Why the complete PET Superduty line offers you the right drill for YOUR job!

Any maintenance or production man will agree that the right drill for the right job means three things: better work, greater efficiency and longer drill life. So why compromise on a drill that's "almost" right?

PET Superduty Drills are available in 54 separate and distinct models... the various speeds and rated power have been carefully selected on the basis of what industrial users have needed and asked for. Result? You get a wide selection... and end up getting the drill that's *exactly right* for your work.

And, a wide selection isn't the only thing you'll like about the PET Superduty line. Just plug in one of these drills: feel the vibration-free power as it flows from

a dynamically-balanced armature through precision-cut gears. Then you will know you've found a drill that will stand up in rugged service day in and day out—and still come back for more!

For complete details on the best in electric drills—sold at prices that will come as a pleasant surprise—find out the name of your nearest PET Distributor. Write today, to Portable Electric Tools, Inc., Dept. P-13, 320 West 83rd St., Chicago 20, Ill.

### Be sure to ask for this free catalog!

Compare these quality drills for yourself... model by model, feature by feature. This illustrated catalog gives you the complete story. Free copy by return mail.



### The features you want are the features you get—in PET Superduty Drills

- Reserve Power; for the extra-tough job
- Heavy-Duty ball and needle bearings
- Precision-Cut, Heat-Treated Gears; for smooth, quiet power flow
- Dynamically Balanced Armatures; for freedom from vibration
- Forced Ventilation; for cool running
- Aluminum Alloy Die Castings; for light weight, easy handling
- Compact Design; makes hard-to-reach drilling jobs easier and faster
- Meet U. S. Government and Military Specifications



**POR TABLE E L E C T R I C T O O L S , I N C .**

320 West 83rd Street, Chicago 20, Illinois

In Canada: Portable Electric Tools, Ltd., Toronto, Ontario

OVER ONE HUNDRED YEARS OF CONTINUOUS SERVICE. ROUNDS, SQUARES, FLATS, HEXAGONS, OCTAGONS

# ANNOUNCING . . .



## OIL HARDENING TOOL STEEL

WL introduces "Whelco"—a new tool steel of M grade—a new steel of maximum toughness, hardness and strength—a steel to assure maximum results at low cost! "Whelco" offers great penetration of hardness, great toughness at high hardness, wide hardening range, fine grain structure, and desirable non-deforming characteristics. "Whelco" has good forging properties and is readily machinable in the annealed condition. All WL warehouses stock "Whelco" M tool steel in a wide variety of flats and squares. Call your nearest WL man for a trial order—the results will speak for themselves!

*WL steels are metallurgically constant. This guarantees uniformity of chemistry, grain size, hardenability—thus eliminating costly changes in heat treating specifications.*

Write today for your FREE COPY of the Wheelock, Lovejoy Data Book, indicating your title and company identification. It contains complete technical information on grades, applications, physical properties, tests, heat treating, etc.

**WHEELOCK,  
LOVEJOY  
& COMPANY, INC.**

**HY-TEN**

and **RISI**



Warehouse Service  
CAMBRIDGE • CLEVELAND  
CHICAGO • HILLSIDE, N.J.  
DETROIT • BUFFALO  
CINCINNATI

In Canada

SANDERSON-NEWBOULD, LTD., MONTREAL

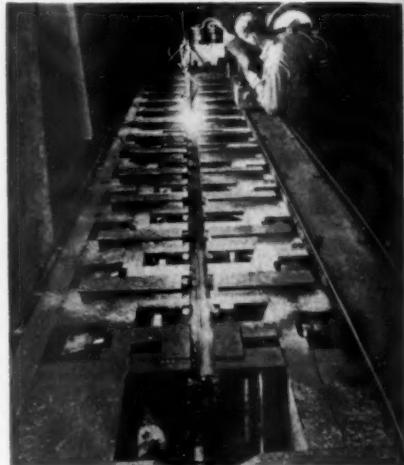
140 Sidney St., Cambridge 39, Mass.

and Cleveland • Chicago • Detroit  
Hillside, N.J. • Buffalo • Cincinnati

BILLETS AND FORGINGS FOR PRODUCTION, TOOL ROOM AND MAINTENANCE REQUIREMENTS

### WELD 3/16" ALUMINUM SEAMS AT 100" PER MINUTE

The accompanying illustration shows application of Aircomatic head to production welding equipment in the plant of the J. S. Thorn Co., Philadelphia, where it is being used to weld 15 foot

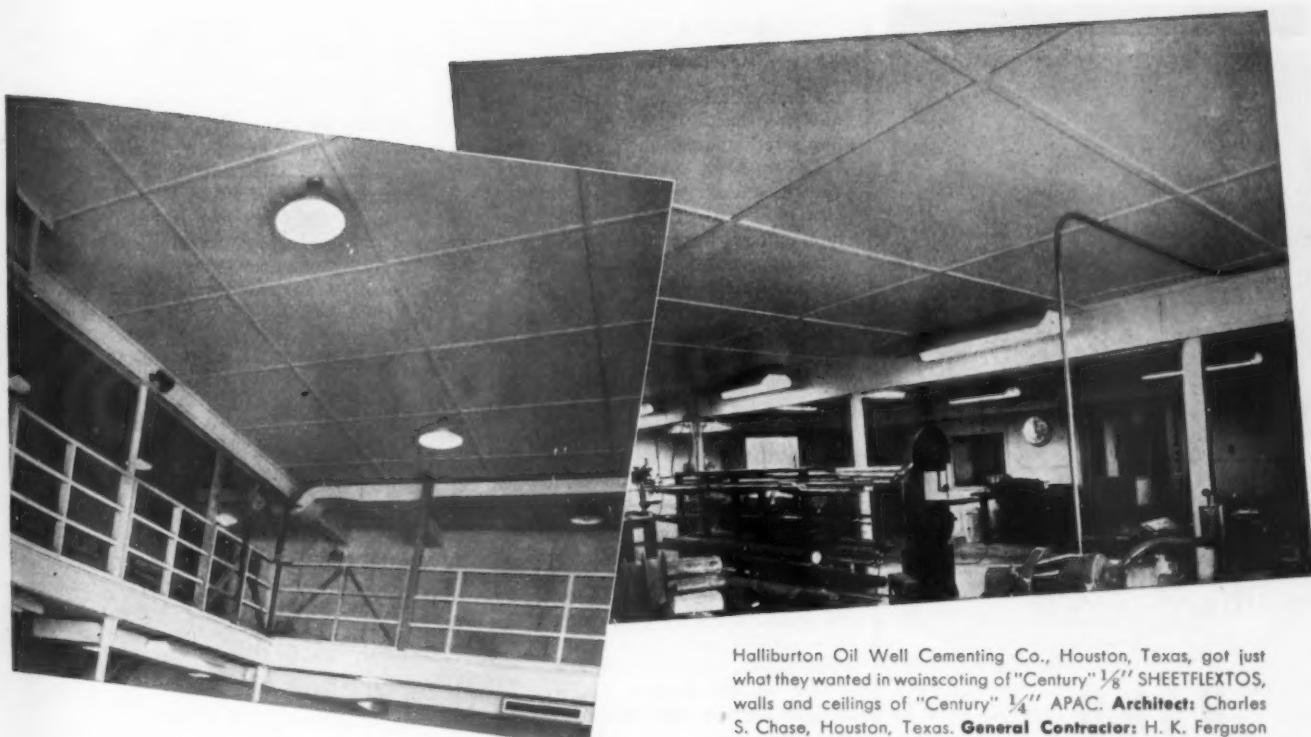


seams in 3/16" thick 61S-T6 aluminum at 100" per minute. The 3/22" diameter 43S filler wire is supplied from a mechanical wire-feed unit. No flux is required because of the protection afforded by the helium shielding gas employed. The head is run on standard track that is accurately aligned with the seam and the operator has but to start and stop the equipment at the beginning and end of each seam.

### NEW CATALYST FACTOR IN PRODUCING TENSION-FREE CASTINGS

Up to now, the surest method of obtaining tension-free castings of phenolformaldehyde resins has been to allow them to harden slowly and carefully at relatively low temperatures, says the Glycerine Association. Various methods involving acid catalysts, higher working temperatures and pressures, etc., have been used to speed up the hardening time, but in most cases some sacrifice in quality has been required because of the internal tensions the finished products contain.

A patent (W. J. Taat & R. W. van H. Korndorffer, U. S. Patent 2,591,634) was granted recently covering a method which is claimed to solve both sides of this problem by considerably shortening the hardening time of cast resins and at the same time producing castings that are free from tensions. A mixture of equal parts glycerine and selenium dioxide is the catalyst recommended in the method. The catalyst is added to the vacuum-dehydrated resin in a ratio of one to four just prior to casting, and the resin cured at 80 deg. C. Besides providing tension-free castings in much less curing time, the method is said to offer the further advantage that the resin syrup can be stored for relatively long periods before the catalyst is added and the resin cast. Castings made according to this method are also claimed to have high flexural and impact strengths.



Halliburton Oil Well Cementing Co., Houston, Texas, got just what they wanted in wainscoting of "Century"  $\frac{1}{8}$ " SHEETFLEXTOS, walls and ceilings of "Century"  $\frac{1}{4}$ " APAC. **Architect:** Charles S. Chase, Houston, Texas. **General Contractor:** H. K. Ferguson Co., Houston, Texas.

*Walls without worries  
... ceiling without overhead  
with "CENTURY"*

## ASBESTOS-CEMENT SHEETS

Halliburton Oil Well Cementing Co. wanted strong, good-looking walls and ceilings that would be *fire-resistant* and *easy to clean*. That's why they chose "Century" SHEETFLEXTOS for wainscoting applied over solid sheathing and "Century" APAC secured right to studs and joists for upper walls and ceilings.

Fire-resistance, of course, is an outstanding feature of these structural boards, combined as they are of virtually indestructible asbestos fiber and portland cement. Ease of cleaning, too, comes "naturally" to their hard, smoothly-textured surfaces that can't be hurt by water, dampness, or rot, and need no protective painting.

But look at the *extra* features that go with "Century" APAC and SHEETFLEXTOS. Both Sheets are also resistant to rodents, immune to termites. They go on

fast, in big sheets (standard 4' x 8') that can be cut or drilled on the job, and fastened easily with screws or ring-fettered nails. They obviate the need for laths and plaster, and, while they require no painting at all, they take decorative colors well. SHEETFLEXTOS, as its name implies, has the added advantage of flexibility, to make curves and domes where indicated.

Both "Century" APAC and "Century" SHEETFLEXTOS make good surroundings for successful work and enjoyable living. Figure on one or both for your attractive, fire-resistant interiors. Write us for further details about these economical products ... and name of your nearest distributor.

**Nature made Asbestos...**  
Keasbey & Mattison has made it  
serve mankind since 1873



**KEASBEY & MATTISON**  
COMPANY • AMBLER • PENNSYLVANIA



## HAND CLEANERS

Skilled hands are a valuable asset to management, as well as an important responsibility of it. Mione Hand Cleaners can insure that asset by helping to share the responsibility for keeping skilled hands in prime working condition.

**WORKERS** like the quick-lathering, gentle-scrubbing, easy-rinsing action of Mione. And its very definite skin conditioning value.

**MANAGEMENT** likes the safe, sanitary, efficient, trouble-free Mione features, plus its economy per pound, low cost per scrub-up, and the basic economy of skilled hands always at top productivity.

**YOUR SUPPLIER** of washroom needs can give you full particulars about Mione so that you, too, can benefit from the know-how gained from 40 years of making nothing but better and better soap for the hands.

WRITE US FOR THE NAME OF THE MIONE SUPPLIER IN YOUR AREA

**Mione**  
MANUFACTURING  
COMPANY  
Makers of famous hand soaps  
for 40 years  
COLLINGDALE PENNSYLVANIA

### FLAME-PLATING PROTECTS PARTS FROM WEAR

Flame-Plating is a new method for applying hard, thin, precise coatings of powdered metals, such as tungsten carbide, on metal parts. It is being used to help solve frictional and abrasive wear problems—no matter how common or how unusual the problem may be. Flame-Plating was developed by Linde Air Products Company, a Division of Union Carbide and Carbon Corporation, 30 E. 42nd St., New York, N. Y.

Extensive tests to date indicate that Flame-Plated tungsten carbide coatings have the desirable properties of sintered tungsten carbide, while at the same time avoiding some of the limitations of the sintered form. Tests have shown that the coatings have wear and abrasion resistance that is as good as, or better than, sintered carbides. Although several coating materials are being tested for use with the Flame-Plating process, much of the initial work has been done with tungsten carbide, and all present commercial applications use this material.

One of the biggest features of this new method is that the temperature of the base metal does not exceed 400 deg. F. during the plating operation. This low-temperature deposition practically eliminates any possibility of a change in the properties of the part being plated, and reduces to a minimum the chance that the part might warp.

The bond between the base metal and the coating is mechanical—it is not a welded bond. Because of the unique way in which the coating is applied, there is no mixing of the coating with the base metal.

#### Adaptability of Process

Flame-Plating is adaptable to many different base metals in a wide variety of sizes and shapes. Steels, cast iron, aluminum, copper, brass, bronze, titanium, and magnesium have all been successfully coated. Flat areas, cylinders, spheres, internal areas, and many irregular shapes have been coated. Tungsten carbide coatings from 0.0005 to 0.020-in. thick are currently being applied. Flame-Plated coatings are available for literally hundreds of application—precision tools and gages, well-drilling equipment, engine shafts and bearings, cotton-picking spindles, and many others.

When any metal part is Flame-Plated, the base metal retains its properties. If copper is Flame-Plated, it has good electrical conductivity; but, at the same time, it resists surface wear. If magnesium or aluminum is Flame-Plated with tungsten carbide, a lightweight part is produced that has wear resistance equal—or superior—to sintered tungsten carbide. Flame-Plated steel parts are tough enough and strong enough to withstand loading and have excellent resistance to severe frictional and abrasive wear.

#### Preparing and Finishing Parts

Parts to be Flame-Plated are undercut just deep enough to allow for the desired thickness of the coating. A small protective lip of base metal is usually left

at any sharp edge where the part may be subjected to abuse or where two surfaces meet at a sharp angle.

After a coating is applied, it can be ground and lapped to a finish of approximately 2 microinches rms. Finish specifications are determined by the requirements of the part. Some applications, such as the teeth of a circular saw blade or the barbs of a cotton-picking spindle, do not require any grinding. The surface finish of as-coated tungsten carbide applied by Flame-Plating is approximately 125 microinches rms.

Resinoid bonded diamond wheels are the only grinding wheels suitable for finishing a Flame-Plated surface. A 100-mesh wheel is used for rough-grinding and a 400-mesh wheel for finish-grinding when no more than 0.005 in. is to be removed. Before and during grinding, the part is flooded with a suitable coolant.

All commercial Flame-Plating is done at the Speedway Laboratories of Linde Air Products Company, Indianapolis, Indiana. Parts are prepared by the customer, sent to Speedway for coating, and returned to the customer. If the parts require finish grinding, the customer has this work done. As the demand for Flame-Plated coating grows, Linde will establish additional facilities for doing Flame-Plating in various parts of the country.

There is a wide variation in the present charges for Flame-Plated coatings because costs are greatly influenced by several factors, including size and shape of area, thickness of deposit, and quantities involved. Prices range from about 70 cents per sq. in. to about \$10.00 per sq. in., depending upon these variables. In terms of comparative costs, Flame-Plating falls somewhere between the cost of a hard-faced part and a sintered tungsten carbide.

In balancing the cost of Flame-Plating against increased service life, no exact comparison is possible because of many factors. In the case of burnishing tools used to produce automotive parts, for instance, Flame-Plated burnishers produce about 20 times as many parts as chrome-plated burnishers. The cost of a Flame-Plated burnisher is increased only 4 times.

### HOW TO CONTROL INDUSTRIAL DERMATITIS

Skin diseases annually cost industry \$100,000,000, according to the West Disinfecting Co., 62-16 West St., Long Island City, N. Y., who point out that dermatitis, most common occupational disease can be controlled, and in 32-page booklet "The Control of Dermatitis in Industry" emphasize that prevention rather than cure provides the solution for the problem. It is further pointed out that 90% of industrial dermatitis cases can be prevented by proper cleansing materials and methods, and correct supervision and instruction. The booklet presents a simple, inexpensive prevention and control program and lists conditions which should be checked to determine the cause of dermatitis when it occurs.

# fine tools that promote consistent accuracy

Even the most highly skilled machinist finds it easier to maintain high production with consistent accuracy when equipped with quality tools. The added assurance which they afford permits faster precision work with less fatigue.

Brown & Sharpe supplies a complete line of Machinists' Tools that represent the fullest measure of sound design, precision manufacture and proven reliability. They are universally recognized by machinists as the criterion of quality tools.

Write for complete small tools catalog.

Brown & Sharpe Mfg. Co., Providence 1, R. I., U.S.A.

WE URGE BUYING  
THROUGH THE DISTRIBUTOR

**Brown & Sharpe** 



The best "soft" striking tool you can buy. Tough, resilient water buffalo faces deliver needed power, cushioned to protect fine finishes and delicate parts. Faces quickly and easily replaced. Safety-Flare handle gives comfortable, non-slip grip. When you need a "soft" hammer, make sure it's a C/R Rawhide Jaw-Head.



#### FACES REPLACED IN SECONDS

Merely loosening a nut releases jaws for replacing faces. Tightening nut holds faces in vise-like grip.

Available from leading industrial suppliers. Also C/R Rawhide mallets and Rawhide mauls.

For further information write Dept. 22

**CHICAGO Rawhide MFG. CO.**  
1301 Elston Ave., Chicago 22, Ill.  
In Canada: Super Oil Seal Mfg. Co., Ltd., Hamilton, Ontario

#### AIR CONDITIONING EXPOSITION TO BE HELD IN CHICAGO

The Eleventh International Heating and Ventilating Exposition is scheduled to be held at the International Amphitheatre in Chicago, January 26 to 30, 1953. Held under the auspices of the American Society of Heating and Ventilating Engineers, the exposition will provide a backdrop for the Society's 59th Annual meeting, and indications are that it will be the greatest event of its kind ever held. Key feature of the exposition will be the educational exhibit of the ASHVE which will present some of the Society's research projects. A large segment of the exposition will deal with various aspects of the air conditioning problem. Included in a display of all types of industrial and ventilating fans and blowers, centrifugal and axial designs included, is a new line of backwardly curved multiblade blowers, and a new line of material handling steel plate fans with extremely high operating efficiencies for this type of design.

#### AIR-COOLED WELDING TORCH

An air-cooled welding torch designed at the Naval Engineering Experiment Station, Annapolis, saves time in changing electrodes and makes it unnecessary to disconnect gas and power lines. The torch is small, light, constructed of insulating fiber and copper tubing. Switch from electrode angle of 180 degrees to 105 degrees is quickly made by removing electrode holder, attaching angular tip to a simple threaded connection. Further details are available from Navy Technical News, Office of Information, Navy Department, Washington 25, D. C.

#### SDPA SAYS MOST SMALL BUSINESS CONTRACTS ARE OF "CALL" TYPE

The amount of defense contracts reserved for small business firms under "joint determination" agreements with the armed services now totals nearly \$103,000,000, and has already resulted in contract awards to 132 individual small firms totalling \$26,950,000, according to Small Defense Plants Administrator John E. Horne.

"Most of the contract awards made to small firms to date under the joint SDPA-Armed Services program are in the form of so-called "call contracts" made by the Air Force," Mr. Horne said. "Because of the nature of these contracts, the bulk of them usually go to small firms under ordinary procurement methods. The purpose of the joint determination program, however, is to assure that such contracts that can be handled by small firms are in fact awarded to them."

Officials explained that under a "call contract" the firm agrees to provide supplies and services up to a specified dollar amount, but there is no ironclad guarantee that the total dollar amount will actually be reached. They said that a firm receiving such a contract is assured of receiving requisitions for a substantial part of the sum named in the contracts, although a portion of it may not be used.

The procedure of making joint determinations was worked out by SDPA and the various branches of the armed services. Under this program SDPA representatives screen unclassified proposed procurements above \$25,000. The Armed Services are then asked to agree to earmark for small business exclusively those procurements which SDPA representatives find suitable for manufacture by small business. As the volume of joint determinations increase, a steadily increasing flow of Government procurement to small firms is anticipated.

#### MILLING CUTTERS AND REAMERS MADE FROM 18-8 STAINLESS STEEL

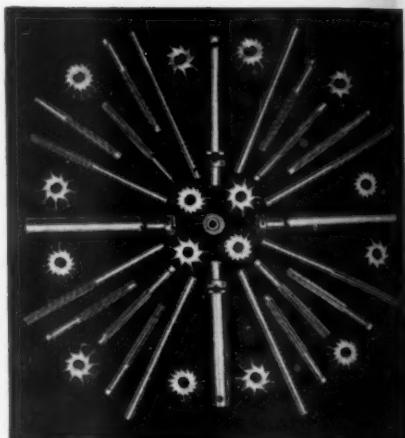


Illustration shows milling cutters and reamers made from 18-8 stainless steel, hardened by what is termed the Super Scottsonizing process, by C. U. Scott & Son, Inc., 1510 First Ave., Rock Island, Ill. Mr. Scott says that the tools are then placed in operation without any further work, and that they have been fully tested by several manufacturing concerns and are giving entire satisfaction.

#### TRENDS IN GEAR MATERIALS

Lucidly written for the user of replacement gears, and for design and production engineers concerned with mechanical properties, ease of fabrication and economy, two publications — Modern Trends in Gear Materials — Part I, Nickel Steel and Cast Iron (20 pages), and Part II, Two New Gear Materials (11 pages), were recently released by the International Nickel Company.

Carburizing and direct hardening nickel alloy steels and low and medium silicon nickel gray cast irons are covered. Machinability and the effects of various types of heat treatment are discussed. Characteristics of a precipitation hardening nickel steel, Nitrallloy N, are reviewed. Recently developed ductile iron is evaluated as offering a new material that combines many of the advantages of steel and gray iron. Its ability to be cast in intricate shapes, its excellent machinability and its elastic properties and ductility that approach those of steel suggest that new designs will be forthcoming to take advantage of its unique qualities.



... produced with the skills which  
originated Hi-test safety glass



The making of Fiber Glass is a precision job . . . one requiring intricate machinery and many special facilities. Pittsburgh Plate Glass Company has all these—plus the experience of 70 years in large volume glass operations and a record of many notable contributions in glass research and development.

Today, for example, Pittsburgh's Hi-Test Safety Glass is the standard in many automobiles—the result of exhaustive research which originated the lamination of glass with an interlayer of vinyl plastic and devised methods which made volume production practicable.

Now these skills are backing up the production of Fiber Glass, assuring both excellence of product and the efficient handling of users' requirements. If Fiber Glass is used in your products—either Superfine Insulation or Yarns, Strands or Roving—investigate the advantages which can be obtained by specifying "Pittsburgh"—PPG Fiber Glass. Pittsburgh Plate Glass Company, Fiber Glass Division, 632 Duquesne Way, Pittsburgh 22, Pa.

#### engineering service available

Opportunities for improving products or production methods involving the use of PPG Fiber Glass are so great that our field engineers may be able to contribute information of value to you. Arrangements for this service, or for obtaining data on PPG Fiber Glass, may be made through our executive offices in Pittsburgh, or our district sales offices in Detroit, New York, Cleveland, Chicago, Cincinnati and Washington.



PAINTS • GLASS • CHEMICALS • BRUSHES • PLASTICS

PITTSBURGH PLATE GLASS COMPANY

# BUY JOMAC® INDUSTRIAL WORK GLOVES

For better hand protection. Jomacs will increase production by helping reduce injuries in your plant. Made of Jomac Cloth — the famous thick, twisted loop pile fabric.

**WASHABLE • FLEXIBLE • INTERCHANGEABLE • RESIST CUTTING • PROTECT AGAINST HEAT AND COLD**  
**Write for our new illustrated catalog**



**C. WALKER JONES CO. • PHILADELPHIA 38, PA.**

## MURIATIC ACID TANK PROTECTED BY SPRAYED POLYETHYLENE

A mild steel tank has been put to use as a container for muriatic acid after being flame-sprayed with polyethylene by Southern Lead Burning Company, Atlanta, Georgia. No defects were noted in the tank after being used to hold acid for six weeks.

The steel tank, 4 by 5 feet and 3½ feet deep, was constructed from  $\frac{1}{4}$  and  $\frac{3}{16}$  inch thick mild steel plate. Before being coated with polyethylene it was sandblasted to remove rust and other impurities, and to roughen the surface to improve the mechanical bond between the metal surface and the flame-sprayed coating.



Operation sprays tank with polyethylene.

A Linde DM-1607 Flame-Spraying Gun was used to apply the polyethylene. The gun was also used for preheating, which is necessary in polyethylene flame-spraying. After the preheating a coating approximately .05 inches thick was applied to the tank. Several passes were needed to build up the coating to this thickness. The speed of the flame-spraying on each pass, after the initial preheating, was comparable to the speed of paint spraying.

After the coating was applied it was tested for porosity with a spark gap tester. No porosity was found. Since polyethylene is a thermoplastic the coating could have easily been patched if any porosity had been discovered.

Tests made on the tank after six weeks of muriatic acid service showed no corrosion of the mild steel plate. The tough, flexible coating was also undamaged mechanically after six weeks.

↑ ↑ ↑

## WHAT IS SIGMA WELDING?

Sigma welding uses a consumable electrode. An arc is maintained in a shield of argon gas between the filler metal and the work piece. For this reason, states Linde Air Products Company, the process was referred to as the shield inert gas metal arc welding process. Since this was quite a mouthful, someone took the initial letters of the words 'shielded, inert, gas, metal and arc' and said sigma. This easy-to-say word is now used to describe the process.



## Taking the Stains and Strains out of DUPLICATING

Duplicating letters was a messy, tedious job in the '90's. If a girl was extremely efficient, she could turn out five copies per minute.

How different today—motor driven machines, featuring automatic inking and feeding, make 180 copies per minute with ease!

Dramatic progress, such as this, has followed the motorizing of equipment used in business, in industry, in the home, and on the farm, too.

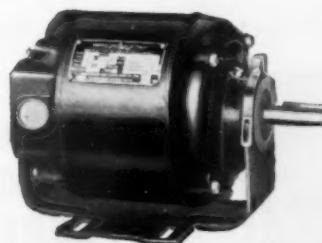
Throughout our 63-year history Emerson-Electric has been called upon by many of the nation's leading manufacturers to design and produce dependable, efficient motors for their applications.

Get detailed information on how Emerson-Electric motors, in ratings from 1/20 h.p. to 5 h.p., can add new sales appeal to your product. Write...THE EMERSON ELECTRIC MFG. CO., St. Louis 21, Mo.

## MODERN BUSINESS IS POWERED WITH ELECTRIC MOTORS

**EMERSON-ELECTRIC'S unique  
*Twin-gineering*  
SERVICE  
solves your power problems**

Our engineers are eager to work with yours in designing and providing the correct motor for contemplated new or improved appliances or equipment. "TWIN-GINEERING" saves costly engineering "back-tracking," and may suggest short cuts and product improvement. Write today for Bulletin No. M169.



A. B. Dick Co., builder of modern Mimeographing equipment is a user of Emerson-Electric motors.

**EMERSON**  
MOTORS • FANS      **EMERSON ELECTRIC**  
APPLIANCES

LEADERS IN THE MOTOR AND FAN INDUSTRY SINCE 1890

# FAST MELTING QUICK RECOVERY

## THE JOHNSON No. 1019

### SOFT METAL MELTING FURNACE Capacity — 1000 lbs. lead

A very efficient and economical furnace for melting lead, tin, zinc, pot metal, type metal, aluminum, etc. No blower required. Nine speedy JOHNSON direct jet bunsen burners deliver pot temperatures up to 1400° F. Assure quick recovery after reloading. Burners are equipped with separate shut-off valves permitting use of only as much gas as required to maintain melting temperatures. Durable construction. Heavily insulated to retain heat and reduce operating costs. Complete with removable cast iron pot and lifting hooks. Available with automatic temperature control at extra cost.

JOHNSON Soft-Metal Melting Furnaces are also available in smaller sizes. Write for complete catalog.

JOHNSON GAS APPLIANCE CO. 603 E Avenue N. W., Cedar Rapids, Iowa



**\$340<sup>00</sup>** F. O. B.  
Factory

**JOHNSON**  
**FURNACES FOR INDUSTRY**

# MARKING DEVICES

## & RUBBER STAMPS

Direct from Manufacturer

Rubber, Brass and Steel Stamps • Corporate and Notary Seals  
Steel Dies • Marking Machines • Trade Name Plates • Gold Stamp-  
ing Dies • Shipping Room Supplies • Engraved Signs and Plates.

SEND FOR  
FREE  
CATALOGUE



SAME  
DAY  
SERVICE

**U. S. RUBBER STAMP CO.**

227 FULTON STREET, NEW YORK 7, N.Y. • CO 7-5714  
WRITE FOR FREE CATALOG

## DUPONT EMPLOYEES FOUR TIMES SAFER THAN AT HOME

The Du Pont Company's employees are just about four times safer at work than they are at home or any place else, even when their jobs call for handling high explosives or volatile chemicals, according to booklet "The Story of Safety" published by that company.

The booklet describes how Du Pont's injury frequency rate has been cut more than 93%—from 10.3 injuries per million manhours worked in 1926 to 0.67 injuries per million man-hours worked in 1951. Had this improvement not taken place, at least 31,000 injuries that never happened could have occurred over the 25-year period. Of the company's 114 plants, laboratories and construction projects, 75 completed the year 1951 without a single time-losing injury. Three of these have gone 22 years or more with a perfect record.

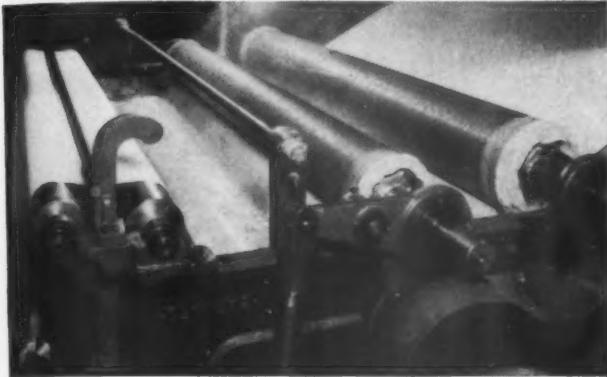
Still more impressive is the record in the construction field. Although Du Pont is a chemical company, its construction organization is in itself one of the world's largest builders. Over a period of 12 years, Du Pont construction has hired approximately 1,000,000 men for a variety of jobs. Its construction record is 40 times safer than the construction industry as a whole.

The basic principle of Du Pont's safety performance, the booklet points out, is simple: Safety is the responsibility of management, in all phases and all levels of organization. Every member of supervision, from the newest foreman to top level authority, is responsible for the safety of the men and women working with him. Safety practices, subject to continual attention and revision, attempt to anticipate every possible risk that may arise, on the theory that well-trained people, using every available precaution, can avoid all personal injuries.

## NEW ROSIN TYPE RUBBER GIVES GREATER TIRE WEAR

Greater tire wear—longer, in fact, than the rubber industry thought possible a few years ago, is a distinct probability in the near future if a new type of GR-S synthetic rubber, now in the pilot plant stage, becomes a production reality. The new rubber was developed by scientists of the Naugatuck Chemical Division, United States Rubber Company. Laboratory tests show that the new synthetic gives 30 to 50 percent more abrasion resistance than standard "cold" rubber. It also has good resistance to heat, cracking caused by rapid flexing, and deteriorating effects of aging in air. The new rubber is made possible by the addition of resin chemicals, by-products of turpentine manufacture, to an extra tough "cold" type of GR-S synthetic rubber. The resin chemicals make the rubber easier to fabricate into products and improve its end product qualities. Pilot plant quantities of the new resin type rubber have been produced at the Naugatuck, Conn. synthetic rubber plant operated by U.S. Rubber for the Reconstruction Finance Corporation.

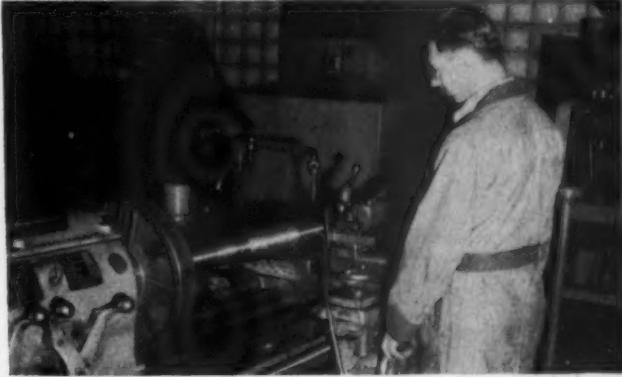
# Short stories of savings with U·S·S Steels



## **Stainless steel jackets on three slasher rolls save \$163.47 per year in maintenance costs.**

Before they installed Stainless steel jackets on the sizing and finishing rolls of three slasherers, Monroe Cotton Mills, Monroe, Ga., spent \$110.40 every year for cleaning the cast iron rolls previously used. Now they save this maintenance expense and also eliminate a twice yearly, 8-hour shut down for cleaning.

Because the stainless jackets eliminate rust, more than 1000 additional yards of fabric are produced per yard of slasher cloth—a saving of \$53.07 in slasher cloth. These maintenance savings alone paid the entire cost of the Stainless Steel roll jackets in less than two years.



## **Free-cutting, prehardened CARILLOY FC steel cuts cost by increasing output 14.3%, increasing tool life 300%**

In producing the heavy-duty drum shafts for their famous "Pipe Layer," the Trackson Co., Milwaukee, Wis., formerly used 4½" round AISI-4140 heat treated to 269-321 Brinell. Machining was extremely difficult. Tools wore out fast. Production was slow.

U·S·S metallurgists recommended a change to free-cutting FC steel. It solved the problem. Now they turn out 8 shafts per day instead of 7 . . . mechanical properties are better . . . tools last three times as long. "As a result," says Trackson's purchasing agent, "we feel that many of our applications requiring considerable machining should be made of this (FC) steel."



## **Hot water tanks weigh 16% less, require 27% less steel, cost 15% less to ship when built with U·S·S COR-TEN steel.**

By using U·S·S Cor-Ten steel in place of carbon steel in their "Dura-Stone lined" water heaters and water softeners, the Troop Water Heater Co., Pittsburgh, Pa., has been able to reduce shell thickness in some of these units as much as 31%, an average of 27% on all units.

This weight saving in the shell, reduces the total weight of the units about 16%, makes them more readily handled and easier to install. Shipping costs are 15% lower—a sizeable saving when distant markets are being served.

In fabrication, the manufacturer reports, U·S·S Cor-Ten steel offers further worthwhile advantages. Because it is stiffer it forms more smoothly in the bending rolls—fluting difficulties disappear. In welding, Cor-Ten steel behaves better than plain steel, does not tend to burn away under the arc, so welding is easier and faster.

*If you want to cut costs  
for your company*

—do what these manufacturers have done.  
Bring your steel problems to us.

Whether you are faced with the necessity of switching over from a steel you normally buy to an alternate grade containing less critical materials, or just want to get better performance out of the steels you are using, we believe we can help you.

The metallurgists and steel engineers we have assigned to this important job of helping you use steel more effectively, bring to your problems wide experience and a thorough knowledge not only of steel but the very latest ideas and time-saving techniques in the working and treatment of steel. To obtain their help call the nearest U·S·S District Sales Office or write to United States Steel, Room 2808U, 525 William Penn Place, Pittsburgh 30, Pennsylvania.



*Only STEEL can do so many jobs so well*

UNITED STATES STEEL CORPORATION, PITTSBURGH • AMERICAN STEEL & WIRE DIVISION, CLEVELAND • COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO •  
NATIONAL TUBE DIVISION, PITTSBURGH • TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA. • UNITED STATES STEEL SUPPLY DIVISION, WAREHOUSE DISTRIBUTORS  
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

UNITED STATES STEEL



**"I buy with confidence  
when I buy from Vinco.  
SO CAN YOU."**

When spline gages, gear pumps, close or loose tolerance gears, formed wheel dressers, mass produced parts, or precision measuring equipment are needed, purchasing agents from coast to coast know they can depend on Vinco to deliver as specified. And now, with the acquisition of Industrial Stamping & Mfg. Co., purchasing agents can procure stampings and plating work that meet Vinco's standard of quality.

**VINCO CORPORATION**

9119 Schaefer Hwy.  
Detroit 28, Mich.

**Formed Wheel Dressers, Auto-motive Cam Checkers, Optical Dividing Heads, Precisiondexes**

**THE TRADEMARK OF DEPENDABILITY**

SPLINE  
GAGES

GEARS

GEAR  
PUMPS

**VINCO**

MILLIONTHS OF AN  
INCH FOR SALE

**Damages For Breach  
Of Warranty**

(Continued from page 126)

violation or contradictory to the terms of the original agreement. Of course, a purchaser never is entitled to recover damages based upon an anticipated breach.

For illustration, the mere fact that a seller states and by his actions implies that he intends to breach a contract is no legal grounds or justification for the purchaser to sue and recover damages.

See *Clark v. Miller*, 122 So. 475. Here a disagreement arose between two contracting parties. Suit was instituted by one of the parties on the contention that certain acts and statements of the other party indicated that he had intended breaching the contract.

The court promptly held that no damages are allowable, and said:

"The mere assertion of a party to a contract that he will be unable, or will refuse to perform his contract, is not sufficient to constitute a breach. There must be a distinct, unequivocal, and absolute refusal to perform. . . . A mere assertion of inability to go on with the contract is not a repudiation of the contract."

1 1 1

**Controversial Questions  
Concerning Cash Discounts**

(Continued from page 114)

tem of making 10th prox payments, with discount privilege, a condition of quotation requests and purchase orders.

Should the purchasing department process invoices for payment? The foregoing discussion is predicated on the supposition that the purchasing department has this responsibility. In a number of cities interviewed, this is done by the accounting department, operating as a separate unit. This complicates the discount problem unless there is a high degree of coordination of paper work to keep vendors paid up to date. Vendors, as a rule, call the purchasing department regarding past-due invoices, apparently feeling that purchasing is responsible for the payment since the purchase was made by them. This detail of procedure may be outside the scope of the present subject, but it should be noted that discounts are more likely to be lost where purchasing and accounting departments operate separately and the

(Please turn to page 314)



## NIGHT LIFE IN THE BIG TOWN

To millions of people nighttime is worktime . . . in office, factory, myriad places. For this is the Electrical Age, which has filled the world with light and power, created new industries and widespread employment. In countless ways it has made work easier, life safer, more comfortable and enjoyable.

Makers of this magic power are the nation's electric utilities, who have invested billions of dollars in generating plants and equipment to assure you dependable, low-cost service.

Helping to provide this assurance are thousands of Exide Batteries for switchgear operation, emergency lighting and other battery jobs.

Where dependability is vital, you'll

**Exide**  
BATTERIES

"Exide" Reg. Trade-mark U.S. Pat. Off.

find Exide Batteries. There is an Exide for every storage battery need. They provide motive power for battery-electric industrial trucks and mine haulage units. They are used in airplanes and ocean vessels . . . and by railroads for car lighting, air-conditioning, diesel locomotive starting, signal systems. Vast numbers of Exide Batteries are used by telephone and telegraph companies, radio and television stations. And on millions of cars, trucks, tractors and buses they daily prove that "When it's an Exide, you START."

1888 . . . DEPENDABLE BATTERIES FOR 65 YEARS . . . 1953

THE ELECTRIC STORAGE BATTERY COMPANY, Philadelphia 2 • Exide Batteries of Canada, Limited, Toronto

JANUARY, 1953

Please mention PURCHASING Magazine when writing to advertisers.

313



**Safe working load  
forged on each hook**

**T**here's no guesswork about the load carrying ability of Billings Drop Forged Hoist Hooks. Every Hook has its safe working load indelibly forged into a spot which anyone can see.

Billings Hoist Hooks provide a wide margin of safety because their "straighten-out" point is approximately four times the safe working load and their elastic limit is approximately twice the working load.

*These vital factors are one of the reasons why it pays to buy Billings.*



**BILLINGS**

**BILLINGS DROP FORGED  
EYE BOLTS - EYE NUTS**



**THE BILLINGS & SPENCER CO. HARTFORD CONN., U.S.A.**

SIZES AND PRICES AVAILABLE FROM YOUR BILLINGS INDUSTRIAL DISTRIBUTOR.

WRENCHES • SHOP TOOLS • INDUSTRIAL FORGINGS SINCE 1869

### Controversial Questions Concerning Cash Discounts

(Continued from page 312)

accounting department processes invoices for payment.

Should accounts be encumbered by the gross or net amount of order? Among the cities reporting, all but one encumber departmental accounts with the gross amount. The one exception uses the net amount—price less cash discount applicable on the order. If it turns out that the discount is lost, it becomes necessary to make additional journal entries in the amount of the discount that was lost. It would seem more advisable to enter the gross amount of the order; then discounts, if earned and taken, may be credited as indicated in the accounting procedure followed.

Should discounts be credited to the ordering department or to a general revenue fund? Practice is about evenly divided on this point. In Winston-Salem, we credit cash discounts to a special revenue fund, later transferring them to a general fund. I believe this to be proper, since the purchasing or accounting department, whichever processes the invoices, deserves all the credit for earning the discount and is charged with the considerable clerical work involved in checking all the calculations involved and setting up the machinery for prompt payment; therefore these earnings belong to the general management rather than to the various ordering departments. Furthermore, a great deal of additional clerical work is required when discounts are credited to ordering departments, an unnecessary expense. This procedure need have no bearing on budget estimates, since departments preparing their budgets for the ensuing fiscal year can use the gross amount of estimate, completely disregarding any cash discounts that may be offered and earned.

### Watch The Warning Signal

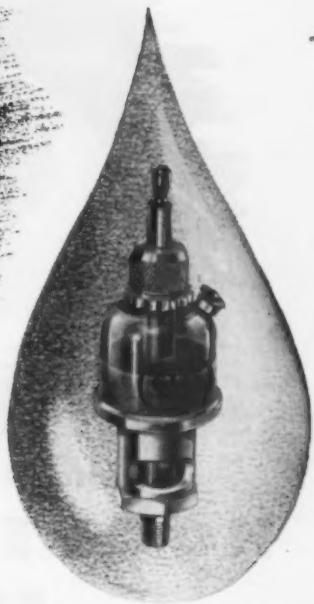
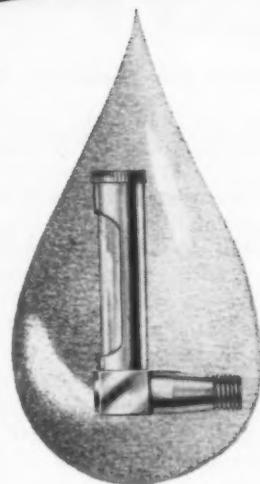
(Continued from page 70)

It would also be well to take stock of our methods and procedures in the operation of our purchasing departments.

If necessary, we should also give attention to setting up training programs for our organization, particularly for the younger people who have had very little experience

(Please turn to page 316)

For Lubricating Devices  
Call On  
**GITS** First!



**GITS** Bros. covers the *entire range* of lubricating devices: Oil Hole Covers, Oil Cups, Grease Cups, Bottle Oilers, Gauges. Gravity-Feed, Wick-Feed, Constant Level, Vibrating Rod styles. Threaded or Drive-type. Elbow or Straight.

**GITS** Bros. offers the most complete selection of standard styles.

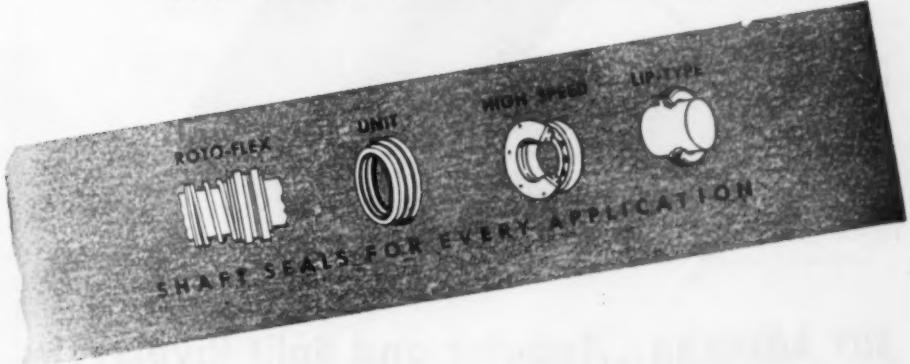
**GITS** consistent quality in design, materials and machining has made Gits Lubricating Devices the standard for industry for more than 40 years.

**GITS** Lubricating Devices are far-famed for solving tough oiling problems at low cost.

**GITS** Bros. Engineering Staff—true specialists in lubrication engineering—is at your disposal.

**GITS BROS. MFG. CO.**

1865 S. KILBOURN AVE. • CHICAGO 23, ILL.





**around the world, it's**

## **HOOVER BALLS**

**made of**

**CHROME STEEL • CARBON  
STEEL • STAINLESS STEEL  
BRASS • BRONZE AND  
MONEL METAL**

*"America's Foremost Ball Manufacturer"*

**HOOVER BALL and BEARING CO.**  
Ann Arbor, Michigan



**BUY AMERICAN...Tubular and Split Rivets...**

### **Watch The Warning Signal**

(Continued from page 314)

in a buyer's market, as opposed to filling out the proper forms and securing a "hunter's license" for the needed materials.

It is readily understood that under present world conditions these trends may not continue. We could become involved in another world war. This possibility would, of course, rule out a buyers' market. However, the buyer's responsibility to management would not be less. Knowledge of market prices and world conditions would be an absolute necessity.

#### **Purchase for Maximum Value**

With the change of administrations in Washington, it is reasonable to assume that governmental regulations and restrictions will be tempered as conditions permit, and that there will be less interference in industry with regard to prices and materials—consistent, of course, with the national welfare and emergencies that might force the issue. In either event, knowledge of markets and purchasing for maximum value still remain a "must" as a fundamental purchasing responsibility and procedure.

The importance of this is emphasized when we realize the tremendous technological changes that are now occurring in industry. Consider the developments in the field of electronics, and of chemistry, and the future of atomic energy, which may be closer than we think. These rapid developments and new advances could change our entire way of doing business. It could conceivably change the course of our product development and manufacturing processes, our methods of distribution and the sales organization of our own companies as well as those of our vendors.

Management will naturally look to the purchasing executive for many of the answers to these problems. As part of the management team, we should take note of the storm warnings and prepare ourselves to meet any eventuality. An awareness on our part, of which way we are going or might be headed, is highly important to our companies. And to be of maximum service, to make the most effective contribution, it is of equal importance for us to recognize the extent of the responsibility and recognition given to the purchasing function by management in the modern industrial organization.

To serve Industry well...

# GENERAL CHEMICAL'S Sodium ↘ Tripolyphosphate

✓ **Produced on the Eastern Seaboard**

✓ **Stocked from Coast to Coast**

No matter where your plant may be . . . you will find General Chemical can meet your Sodium Tripolyphosphate requirements quickly, conveniently.

Service and supply are assured by General's large production facilities on the Eastern seaboard, coupled with extensive stocks at company warehouses from coast to coast.

Quality is assured by a fine, white, free-flowing product which is well suited for use in synthetic detergents and other exacting applications. It is readily soluble and possesses high sequestering ability in combination with good detergent qualities.

So—for highest quality *plus* ready availability, specify General Chemical's "Tripoly". For full information, write today to any company office listed below.



## GENERAL CHEMICAL DIVISION

ALLIED CHEMICAL & DYE CORPORATION

40 RECTOR STREET, NEW YORK 6, N. Y.

Offices: Albany • Atlanta • Baltimore • Birmingham • Boston • Bridgeport • Buffalo  
Charlotte • Chicago • Cleveland • Denver • Detroit • Greenville (Miss.) • Houston  
Jacksonville • Kalamazoo • Los Angeles • Minneapolis • New York • Philadelphia  
Pittsburgh • Providence • San Francisco • Seattle • St. Louis • Yakima (Wash.)

In Wisconsin: General Chemical Company, Inc., Milwaukee

In Canada: The Nichols Chemical Company, Limited • Montreal • Toronto • Vancouver



### USES

As a builder for synthetic detergents



In textile processing



In oil well drilling



In paper manufacture



As a water softener

**IN PEACE TIME  
DEFENSE TIME  
EVERY TIME**

MAKE "Standard" YOUR SOURCE  
FOR WELDED TUBING EFFICIENTLY PRODUCED!



**Specially Designed  
New Modern Plant with  
Complete Facilities for Production of:**

- ★ Welded Mechanical ★ Boiler and Heat Exchanger
- ★ Welded Stainless ★ Exclusive "Rigidized" Patterns

**Complete Range of Electric Weld Tubing for  
Structural, Mechanical and Pressure Applications**

Here in this great new plant are the most modern and complete facilities for the manufacture of Welded Steel and Stainless Steel tubing found anywhere. Let "Standard's" specialists help you!



**ROUND • SQUARE • RECTANGULAR • SPECIAL SHAPES  
including UPSET • FLARED • FLANGED • TAPERED**

**STEEL TUBING SIZES:  $\frac{1}{2}$ " O.D. to  $5\frac{1}{2}$ " O.D. .028 to .260 wall  
STAINLESS SIZES:  $\frac{3}{8}$ " O.D. to 3" O.D. .028 to .095 wall**

### Goods Lost In Transit

(Continued from page 83)

had not fulfilled his contract.

The time and manner of the transfer of ownership may be the subject of well nigh infinite modifications in sale agreement provisions. In Detroit, Michigan, a dealer in paving stones received a government order for 30,000 tons of odd sized paving stone. For assembling and storing the material the contractor rented a plot of thirteen acres having a 625 foot frontage on the Rouge River.

#### Buyer's Privilege Lapses

A contract for the purchase of stone of this character was made by the contractor with a quarry company and 9,700 tons were delivered. In the meantime the quarry had on hand, collected for future delivery, the remainder of the 30,000 tons, representing two further shipments. Its storage facilities were so overtaxed that the quarry asked the contractor for permission to ship the remaining stone immediately, with the agreement that shipments would not be billed until 75% of the previous delivery had been exhausted.

A few hours after the last shipment had been delivered at the Rouge River yard the river bank sheared off, carrying with it over 3,000 tons of this stone into the river. In the action brought by the quarry company for the unpaid balance on this paving stone purchase contract the court said of the sale,

"In a sale with privilege of return title passes on delivery but the buyer has the privilege of revesting the title in the seller by returning the goods. The government used an amount greater than the whole first cargo plus 75% of the second. Hence the time fixed for returning any of the stone is passed. After title has been transferred to the buyer, the goods are at the buyer's risk."

#### Uniform Sales Act

Thirty-four of the states, besides the District of Columbia and the territories of Hawaii and Alaska, have enacted statutes defining the liability for loss of goods that are the subject of sale agreements, except in so far as the sale terms may be changed or modified by the agreements of the parties.

**"Risk of loss.—Unless otherwise agreed the goods remain at the seller's risk until the property**  
*(Please turn to page 320)*

it's paper

...BUT IT  
LOOKS LIKE  
STEEL!

The high gloss and transparency of glassine paper is secured by rolling or "ironing" the paper under high heat and pressure between the rolls of a giant super-calender. Half of the rolls on this machine are steel . . . half are made of paper itself! Discs of a soft, all-cotton paper, called Riegel's Blue Calender Roll, are loaded on the shafts and compressed into hard, dense forms. These are then turned down and polished until they look and feel like steel.

This is just one of hundreds of examples of Riegel's ability to make special papers to meet almost any need. We now produce more than 600 grades . . . many with properties that would surprise you. Tell us what you would like paper to do for you. If we can't supply it, we will be glad to refer you to others who can. Write us now.



RIEGEL PAPER CORPORATION • P. O. Box 170 • Grand Central Station • New York 17, N. Y.

Riegel

• TAILOR-MADE PAPERS FOR INDUSTRIAL USE •

JANUARY, 1953

Please mention PURCHASING Magazine when writing to advertisers.

319



**but, you should!**

• Your Williams distributor will give you 8 good reasons why it's "Wise To Buy Williams". He can supply you the right Williams tools to meet your needs better because each must pass through these 8 steps:

1. Market Research: To determine its need, application and usefulness.
2. Product Research and Design: To develop the finest possible product.
3. Preparation of Dies and Tooling: To produce it at a conservative price.
4. Pilot Run: To prove manufacturing process and provide test units.
5. Product Test: In field and laboratory to confirm design and performance.
6. Refinement: To incorporate all improvements developed through tests.
7. Production: Under continuous material and process controls.
8. Guarantee: Against defective workmanship and material is the final expression of Williams built-in quality.

A typical example of a Williams' quality product is the...

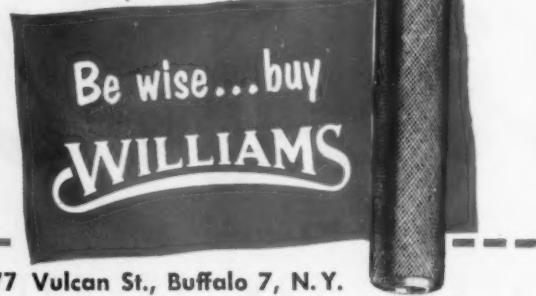
### **NEW Williams REVERSIBLE "SUPERRATCHET"**

**offering all these advantages:**

- 82 tooth action concentric mechanism providing easier, faster nut rotation in close quarters.
- Unique "shifter" design and accessibility which permit instantaneous reverse action and one hand operation.
- Slender, well balanced with a comfortable knurled handle to give operator a firm, safe grip and working "feel".
- Durable selected alloy steel, heat-treated, highly polished and chrome-plated.

- Ask your distributor to demonstrate these superior features.

Write us for detailed, illustrated Catalog No. 301.



J. H. WILLIAMS & CO., 477 Vulcan St., Buffalo 7, N.Y.

### **Goods Lost In Transit**

(Continued from page 318)

therein is transferred to the buyer, but when the property therein is transferred to the buyer the goods are at the buyer's risk, whether delivery has been made or not, except that—

(a) Where delivery of the goods has been made to the buyer in pursuance of the contract and the property in the goods has been retained by the seller merely to secure performance by the buyer of his obligation under the contract (conditional sale agreements) the goods are at the buyer's risk from the time of such delivery.

(b) Where delivery has been delayed through the fault of either the buyer or seller, the goods are at the risk of the party in fault as regards any loss which might not have occurred but for such fault."

### **WOOL FELT COMMERCIAL STANDARD**

Commercial Standard 185-52, Wool Felt, published by the U. S. Department of Commerce, is available from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. at 10¢ per copy. The standard is applicable to types of felt put up in roll form and suitable for mechanical use, known as mechanical roll felt; to felt sheets which are customarily fabricated individually from square batts of carded stock; and to roll felts for the apparel and decorative trades. The standard includes thicknesses and weights, with permissible tolerances, chemical and physical requirements, and methods of test. It does not include punched, woven, synthetically bonded, stitched, quilted or paper felts, or other materials of felt-like appearance, which are products of entirely different construction.

### **DPA ANNOUNCES ALUMINUM EXPANSION GOAL**

An expansion goal for aluminum sheet and for aluminum sheet and plate heat treating facilities was announced by the Defense Production Administration.

Under the first part of this goal, the aim is to provide capacity for an additional 684 million pounds annually of aluminum sheet by January 1, 1955. This expansion will increase aluminum sheet, plate and foil capacity from 1,908,000,000 pounds in 1950 to 2,592,000,000 pounds in 1955.

The second part of the goal was established to provide capacity for heat treating an additional 846,000,000 pounds annually of aluminum sheet and plate. This expansion is designed to increase aluminum sheet and plate heat treating capacity from 702,000,000 pounds in 1950 to 1,548,000,000 pounds in 1955.



FIGURE 1—TO MOUNT THE QD IN TWO PIECES you (1) slide the split hub on the shaft, (2) position it with the locking clamp-screw in the flange, (3) draw down on the set-screw over the key (QD exclusive) to prevent it from drifting, (4) slide the QD rim with its large taper bore opening up on the taper of the hub, (5) draw up on three heavy hex-head pull-up bolts for a tighter grip than you get with any other sheave.



FIGURE 2—TO MOUNT THE QD AS A UNIT where a Woodruff key is used in a shouldered shaft, you (1) locate the loosely assembled hub and rim of the QD sheave against the shaft shoulder and (2) draw up on the three heavy hex-head pull-up bolts. That's all there is to it. And you haven't sacrificed any grip on the shaft. For removal, you simply use pull-up bolts as jack bolts in specially tapped holes.

## Let's settle this one RIGHT NOW!

You can't have your cake and eat it too.

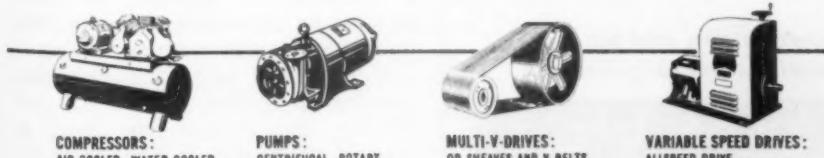
A one-piece sheave assembly may grip the shaft sufficiently tight for average use, but it *won't keep the shaft key from drifting*. Your answer to this problem lies in an *exclusive* key set-screw in the hub of the *two-piece* Worthington QD\* Sheave. The set-screw is tightened with the hub on the shaft before the rim is slipped on (figure 1).

Of course, if you use a Woodruff key in a shaft with a shoulder, drifting of the key is no problem and you then can mount the Worthington QD assembled in *one piece* without any sacrifice of its famous friction-cone grip (figure 2).

**WORTHINGTON'S COMPLETE LINE OF MULTI-V-DRIVES** includes QD sheaves in all sizes, QD Juniors and other fractional horsepower V-pulleys, as well as Worthington-Goodyear V-belts. Your distributor has complete stocks backed by the largest factory stocks you'll find anywhere. Write for Bulletin V-1400-B7F to Worthington Corporation, Oil City, Pennsylvania.

\*Reg. U. S. Pat. Off.

MV.2.7



Buy these Worthington standard products from your local distributor

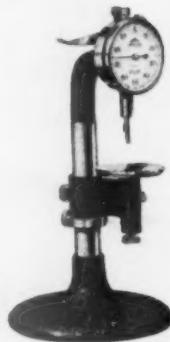
**WORTHINGTON**

 Multi-V-Drives

# FOR Strictly IMPERSONAL INSPECTION CHOOSE AMES DIAL COMPARATORS

Ames Dial Comparators make the inspection of duplicate parts an extremely simple, rapid and accurate operation. Ames Comparators are strictly impersonal in their accuracy — the results being in no way dependent on the skill or judgment of the operator. The pressure of the gauging members against the work is mechanically determined and therefore uniform.

Check the Ames Dial Comparators shown — one of them may solve a Quality Control problem for you.



**Ames No. 1** Dial Comparator is an easily adjustable bench model that measures objects up to 2" in cross section. The table bracket may be quickly located and locked in position on the column. The table itself may be further positioned and locked for final fine adjustment. This comparator is designated *Ames No. 1W* when equipped with dead-weight contact pressure and contact area to ASTM specifications for measuring resilient materials, such as rubber, plastics, etc.



**Ames No. 2** Dial Comparator is a compact, stable bench model for measuring non-yielding materials — sheet metal, glass, hard rubber. The 2" diameter table is adjustable to bring pointer to zero. *Ames No. 2W* is similar to the Ames No. 2, but is furnished with dead-weight contact pressure and contact areas to ASTM specifications for checking textiles, plastics, sheet rubber, etc.



**Ames No. 13** Dial Comparator features flat-ground, cast-iron base of ample size for using V-blocks and locating fixtures for checking rounds, flats and odd shapes. Also, the No. 13 can be fitted with a fine adjustment for close setting. Accurately adjustable bracket holds any Ames Micrometer Dial Indicator.



**Ames No. 130** Dial Comparator is designed especially for inspecting comparatively large parts. For this reason, the flat-ground steel base, the adjustable indicator support on which can be mounted any Ames Micrometer Dial Indicator, and the upright column are proportioned to suit the user's particular requirements.

*Send us your Quality Control job specifications, and we will supply complete details and proposal without obligation.*

Representative in  
principal cities.

B. C. AMES CO. 31 Ames Street  
Waltham 54, Mass.

Mfgr. of Micrometer Dial Gauges • Micrometer Dial Indicators

## Plugging The Leaks

(Continued from page 119)

he needs them. He calls upon a university located in his city for students to work the rush afternoon hours, and has had no difficulty finding those whose schedules fit in with his needs and who are glad of temporary remunerative work in their free time. He gets clean-cut young men and women with good presence, and in the summer months when he needs no extra help, the students are out of school anyway.

Company I had, nominally at least, a plant that was adequately equipped to handle its business, but the management had an idea that newer equipment would pay its way in more efficient operation and leave them with a more modern plant. The executives and department heads sat down to figure out the spots where such improvements might be made. They found two places at which an immediate expenditure of about \$5,000 would pay for itself in savings within two years, and thereafter continue to pile up operating savings. The survey has been continued with profitable results. In some cases, they were reassured that present equipment still had several years of useful life, but in other cases an active replacement program is indicated, and the new investments are made where the greatest promise of savings and profits exist.

### A Time Bonus

Company J looked for cost reduction through stimulating better employee effort, and achieved it without the need of expending additional bonus dollars.

"The conventional incentive systems didn't seem to fit our case," says the office manager, "so we installed one of our own instead, granting bonus time rather than bonus dollars. Our day normally begins at 8 a.m. But on Mondays, after the week end, employees now report in at 9 o'clock instead of at 8. This hour of time is a bonus. If all the scheduled work gets out during the week, the hour belongs to the employees, but it is understood that if we get behind, they still 'owe' the company the hour of work. They can gain other time bonuses by getting work out ahead of schedule. In practice, the staff as a whole now works about a 37½ to 38 hour week, while receiving a full 40 hours' pay. The company benefits in better teamwork and morale, and there has been a notable improvement in the promptness with which the work is handled."



## SPANG CW

keeps West Virginia's  
skaters on their toes

Figure skaters never worry about the weather in Huntington, West Virginia. In their new million dollar recreational center the ice stays hard and fast all during the season. And it's kept that way day after day by a refrigerant flowing through a welded web of Spang CW Steel Pipe under the entire skating area.

Wherever long time reliability is a must—whether in skating rinks or the largest commercial buildings—architects, contractors, owners consistently specify dependable Spang CW. They know from experience that the name Spang is a guarantee of year after year of maintenance-free service.

Quality-controlled from steel to finished form, Spang CW is always uniform in every dimension. Easy to cut, easy to weld, easy to bend, it's the *easy* way to reduce installation time and costs.

Specify Spang CW Steel Pipe by name—you'll find leading distributors in every section of the country.

Owners: Cabell County Recreation Board  
Contractors: Frick Company, Waynesboro, Pa.

Architect: Lewis E. Stettler



**SPANG-CHALFANT**

DIVISION OF THE NATIONAL SUPPLY COMPANY

General Sales Office: Grant Building, Pittsburgh  
30, Pa. District Sales Offices: Atlanta, Boston,  
Detroit, Houston, Los Angeles, New York, Philadelphia, Pittsburgh, St. Louis

**PRECISION MADE**

# PHEOLL SCREWS BOLTS, NUTS and Special Fasteners...

save assembly time,  
improve product strength  
and final  
appearance



## ACCURATE MACHINING SAVES TIME

Pheoll Screws, Bolts, and Nuts are easier to start, easier to drive and easier to tighten—because they're accurately machined and threaded. These features cut your assembly time and cost.

## COLD ROLL COUNTERSINKING SAVES TIME

The grain structure and flow of metal obtained through cold heading and roll threading increases the structural strength of Pheoll Fasteners. Cold working improves thread bearing surfaces, providing greater area of contact for firmer grip. Greater strength reduces possibility of shearing, and time lost in subsequent removal and retapping.

## OUR INSPECTION IMPROVES YOUR PRODUCT APPEARANCE

Step by step Pheoll inspection, through every process of production, assures uniform head size and shape; cleanly milled and recessed heads, neat chamfering and countersinking. All these factors contribute to the quality and finish which add materially to your product's final appearance. Write for Pheoll's product literature and price list.

THESE PHEOLL PRODUCTS INCREASE  
YOUR PRODUCTION RATE. Thumb Screws  
Machine Screwst • Wood Screwst • Sheet  
Metal Screwst • Stove Bolts • Rolled  
Threaded Wires and Studs • Special Rivets  
and Pins • Brass Washers

†Furnished in slotted  
and Phillips Recessed Head Types

**PHEOLL**  
MANUFACTURING COMPANY  
510 Randolph Street, Chicago 50, Ill.

## MELLON INSTITUTE RESEARCH DEVELOPS IMPORTANT GRINDING DATA

Valuable data on grinding, of considerable importance to both engineers and production management, increasingly are becoming available as the result of basic research being conducted at Mellon Institute by the L. Leslie Byers Memorial Fellowship sponsored by the Grinding Wheel Institute.

### Important Results of the Project

Currently, the research seeks to answer the question: "What happens to a surface when it is ground?" Here are some of the important results of the project to date:

1. Better techniques have been developed for studying the residual or "locked in" stresses in surfaces.

The practical importance of such stresses is that they may affect the service life of many important manufactured parts. The effect may be beneficial or detrimental, depending upon the type of stress, its magnitude and location in the part, and the forces to which the part is subjected in use.

2. Considerable information has been obtained through investigation of residual stresses in surfaces generated by abrasive action. Like all mechanical methods of generating surfaces, grinding induces residual stresses.

3. In the case of abrasive wheel grinding, these stresses may be either tensile or compressive, depending upon direction and the depth below the surface. The thickness of the stressed layer, which has varied from about two to more than 40 thousandths of an inch in experiments conducted to date, depends upon the composition of the steel, its heat treatment and the severity of the grinding. The highest stresses usually lie well within one thousandth inch of the surface in this type of grinding.

4. Lapping with loose abrasive induces compressive stresses in steel surfaces which extend a few ten-thousandths of an inch into the metal.

5. Barrel finishing with abrasive grain induces predominantly compressive stresses in steel surfaces.

6. Preliminary studies of residual stresses in glass and plastic have shown that these materials are similar to steel in their reaction to grinding.

7. Valuable information has been accumulated concerning the residual stresses resulting from the heat treatment of steel.

Future plans call for an extension of the experiments to include methods of alleviating grinding stresses when they are detrimental, and fatigue studies to determine their effect upon service life.

Other research projects currently are in the planning stage, each geared specifically to the objective of yielding useful information on grinding, especially the use of the grinding method in large production operations.

The L. Leslie Byers Memorial Fellowship at Mellon Institute is under the direction of Dr. Harold R. Letner.

## Meet the Schedule! **PIONEER Stanzoils®**

When employees hands are comfortable and properly protected by the right gloves for the job:

- there are fewer work stoppages
- injury claims decrease
- work goes faster, production increases

*—all at lower per hour glove cost to your plant!*

Long-wearing liquid-tight neoprene Stanzoil industrial gloves resist damage from acids, oils, solvents, caustics. 32 styles, weights, sizes, colors. New PIONEER catalog shows you at a glance how to select the most efficient and economical gloves for each operation. It pays you to write for your copy today.



N-36 medium weight all neoprene glove, 11" length. Snug curved fingers, non-slip grip surface afford almost bare-hand dexterity.

Industrial Products Division

The **PIONEER** Rubber Company  
240 Tiffin Road • Willard, Ohio

Quality Gloves for over 30 Years



**ELECTRIC WIRE, CABLE  
& CONDUIT IN STOCK  
FOR IMMEDIATE DELIVERY**

**SEASON'S  
GREETINGS**

On this, the occasion of a new year, our entire staff extends the most cordial greetings to all our friends and customers... and the hope that their year '53 will be a prosperous and fruitful one.

**HALL-MARK ELECTRICAL SALES CO.**  
542 Wortman Ave. • Brooklyn 8, N.Y.  
Nightingale 9-7400

**Your Best Buy**

**CURTIS**  
Exclusively a manufacturer of  
**UNIVERSAL JOINTS**

Specify Curtis Universal Joints if you want fast delivery and efficient service.

- Single or Double
- Solid Centered, or Bored
- Standard for Heavy Duty
- Lo-Friction for special duty
- Assured Quality — Curtis exceeds Class I standards for the Army, Navy and Air Force
- Few Parts — mean easy assembly and disassembly
- Made of alloy steels, each part specially heat treated—for long life
- 14 sizes —  $\frac{3}{8}$ " to 4" O.D. — always in stock (up to 6" O.D. to order if required)
- Facilities and engineering skill immediately available for special application requirements

Write today for engineering data and price list

**CURTIS UNIVERSAL JOINT CO., INC.**  
15 Birnie Ave., Springfield, Mass.  
As near to you as your telephone

A MANUFACTURER OF UNIVERSAL JOINTS SINCE 1919



**"Fischer Turned"**

→ **BRASS NUTS**

## are checked by gage

You won't lose your temper over off-tolerance if you order "Fischer Turned" Brass Nuts for your products. All Fischer nuts are carefully gaged from rod to finished precision product. Fischer guarantees you that every order will meet your specs.



### GET PRECISION AT LOWEST PRICE

By dealing direct with Fischer you free yourself from high blood pressure and high prices . . . you get the highest quality nut at the price of common punched nuts. We'll be glad to prove that promise with samples and quotations. Send today!

### FISCHER SPECIAL MANUFACTURING CO.

446 Morgan St., Cincinnati 6, Ohio ABC

Please send me samples of "Fischer Turned" Brass Nuts in these sizes \_\_\_\_\_

and prices based on a quantity of \_\_\_\_\_

COMPANY \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ ZONE \_\_\_\_\_ STATE \_\_\_\_\_

YOUR NAME \_\_\_\_\_

**The NEW F & II ECONOMY WHEEL**

**A Packaged WHEEL-HUB-SPINDLE-BEARING ASSEMBLY for LIGHT APPLICATIONS**

This LOW COST, soundly engineered Economy Wheel is designed for loads averaging 750 lbs. per wheel. For original and replacement use on portable grain elevators, light trailers, lime spreaders, sprayers etc., etc.

**ASSEMBLY PARTS**

(Left to Right) Rim and Disc, Spindle, Washer, Roller Bearing, Hub, Spacer, Roller Bearing, Washer, Cap and Locking Pin.

**MANUFACTURERS**

Here is a standard approach that relieves you of engineering and procurement problems—and SAVES substantially on cost. Worth investigating.

**We Invite Your Inquiries**

**FRENCH & HECHT DIVISION**  
**KELSEY-HAYES WHEEL COMPANY**  
**DAVENPORT, IOWA, U. S. A.**

72 East River Street, Davenport, Iowa

## Steel Executive Lists Cost-Cutting Opportunities

The threat to profits in the "coming reduction in demand" can be met by taking advantage of the many opportunities for cutting costs that exist in any or all departments of a company, David F. Austin, executive vice president-commercial, United States Steel Company, said recently.

Speaking before the Chicago chapter of the National Association of Cost Accountants, Mr. Austin said: "Opportunities for trimming costs, or receiving more for the same cost—which accomplishes the same result—are by no means limited to any one department. Opportunities exist in production, in purchasing, in accounting, in sales, in each and every department.

"Let me" he said "without reference to the departments involved, list briefly some of the cost cutting actions which can be considered:

"1. Examine the record of salesman's calls to determine whether his time is being properly distributed.

"2. Check on all regular and occasional reports to determine whether they are being used, whether they serve a useful purpose, and whether they can be simplified,

issued less frequently, or completely eliminated without loss in sales or operating effectiveness.

"3. Consider selling or otherwise disposing of unprofitable and not needed plants, equipment, and product lines.

"4. Consider buying various materials, parts, or supplies instead of manufacturing them if this can be done without jeopardizing needed availability. Conversely, consider manufacturing items now purchased instead of buying them.

"5. Determine whether purely service functions which lend themselves to centralization are being performed at higher cost in numerous places. For example, does every department have its own statisticians, mailing room, library, personnel section, and supply room? Is this essential and efficient, or can consolidation be achieved without loss of performance?

"6. Determine whether needed items can be bought satisfactorily closer to home than is now done and shipping costs thereby reduced.

"7. Investigate to see whether savings can be achieved by a rental arrangement on salesmen's cars.

"8. Find out whether the weight and cost of shipping containers can be cut and damage to products reduced by redesign, or through the

use of new materials.

"9. Consider shifting products from one plant to another, separating production subject to long runs from job shop items, in order to reduce costs and improve quality.

"10. Consider whether present advertising is aimed directly at markets and limited to the function advertising is expected to perform in an attempt to better reach those markets.

"11. Check to see whether there is duplication of effort, the same job being performed by several people or departments.

"12. Search continually for labor-saving equipment and methods in an effort to increase output per man hour, and thus offset rising hourly wage rates.

"13. Get the need for cost control and reduction into the daily thought of every supervisor and try to make your entire organization cost conscious.

These are just a few examples of cost-saving opportunities. Such opportunities represent big possibilities in most companies, and it is important to begin now to seek them and not wait until the wolf is at the door.

Both of these approaches add up, in the final analysis, to studying your company, inside and out.

## BUYER'S & SELLER'S MART

Contract Work • Equipment For Sale • Employment and Business Opportunities

### RATES

Undisplayed (set solid) .....	90¢ line
Positions Wanted .....	45¢ line
Displayed .....	\$8.50 inch

### REQUIREMENTS

Undisplayed (want-ad style), minimum charge 4 lines, prepaid. Figure forty-four letter spaces (five average words) to a line. Add one line for box number address; replies forwarded without charge. Discount of 10% for twelve consecutive displayed insertions. Forms close 15th of month preceding date of publication.

Send orders to: CLASSIFIED DEPARTMENT

PURCHASING

205 East 42nd Street, New York 17, New York

### ROLLER CONVEYOR

200 Sections, 2" rollers on 4" centers 14" wide, 10' long, with stands, 90 and 45 deg. curves. Exceptionally good condition. Very reasonably priced.

NATIONAL EQUIPMENT SALES, INC.

24-18 Jackson Ave.,  
Long Island City, N. Y.

### POSITION WANTED

Purchasing Agent, 7 years experience all phases procurement for multi-plant oils-chemicals operation College. Resume, excellent references available. Contact Box 1359, PURCHASING, 205 East 42nd St., New York 17, N. Y.

Purchasing Agent or Assistant. Age, 45, raw materials specialist, multi-plant manufacturing operation experience. Directed all phases of purchasing procedure, expediting, inspection, stock control. Box 1360, PURCHASING, 205 East 42nd St., New York 17, N. Y.

### STEEL SHELVING 750 SECTIONS

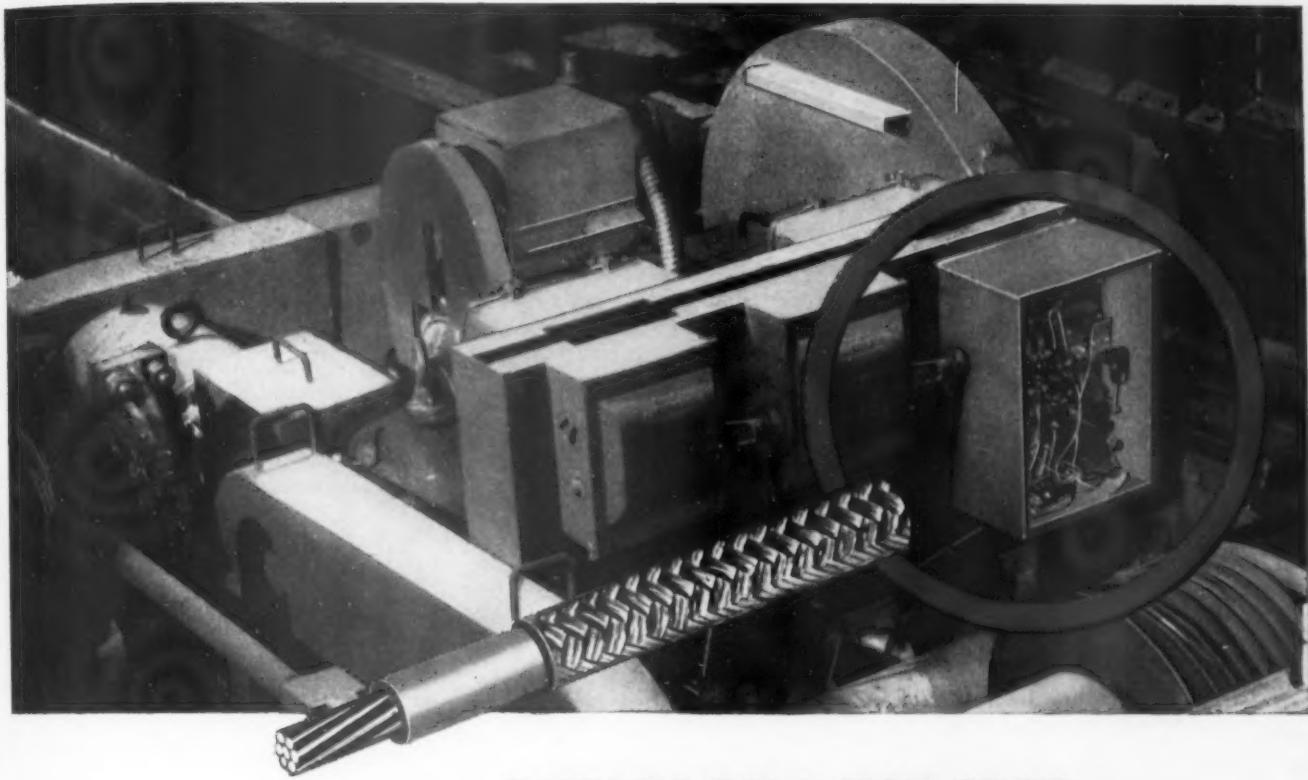
24" x 36" x 9'3" high 5 shelves per section with common backs and sides, shelf reenforcers, heavy duty.

SACRIFICE PRICE

NATIONAL EQUIPMENT SALES

24-16 Jackson Ave.,  
Long Island City, N. Y.

PURCHASING



**2 YEARS ON A HOT SPOT...**

**and still like new:**

## **OKOTHERM CONTROL CABLE**

Temperature around a steel mill soaking pit runs in excess of 300° F... a hot spot for *any* control wiring.

Before using Okotherm, this steel mill equipped its soaking pits with asbestos insulated control wire. This wire, however, lasted an average of only two months. Replacing the asbestos wiring circuits meant that the pit had to be shut down; this involved cooling and reheating periods for each pit. Obviously, production was interrupted every two months or so, with considerable material, repair and maintenance costs also involved.

In September 1950, Okotherm cable was installed. *Since that time, no replacement has been necessary.* As of October 1952 the Okotherm cable is still in excellent condition!

Okotherm insulation, a silicone rubber compound developed by Okonite, maintains excellent electrical and physical properties over an extremely wide temperature range. High moisture resistance is another Okotherm characteristic. From printing presses to jet engines, Okotherm has successfully replaced other types of heat-resisting wires with overall savings as high as 88%.

Okonite's broad research, design and manufacturing skills have developed long-lived, trouble-free cables for normal use, as well as specialized cables like Okotherm. For any cable installation, it will pay you to see your Okonite representative. Or write to: The Okonite Company, Passaic, N. J.

*The best cable is your best policy*



**insulated wires and cables**

# LETTERS . . .

## CANCELLATION COSTS

We would appreciate your ruling on a sample case as outlined below, to help settle a friendly controversy.

'A' placed a purchase order for a catalog item, shipment to begin 4 months after date of order and completed in 8 months. Two months after placing order to 'B', 'A' cancelled the complete order before any shipments or acknowledgement of the order. The item ordered is standard, regularly produced merchandise and is not a special item in any way. Is 'A' liable for any cancellation costs?

J. G. Dufenetz, Pur. Agt.  
Welded Construction Eng. Co.  
Cleveland, Ohio

● The general principle that would seem to apply is that no contract exists without an acceptance on the part of the vendor, agreeing to accept the buyer's offer (as represented by the purchase order) and committing himself to perform his part of the transaction. In the absence of such an acceptance, express or implied, the offer can be revoked (order cancelled) without penalty.

There has been considerable litigation on the question of whether a mere catalog listing, circulated generally among prospective buyers, constitutes an offer so that the buyer's purchase order is in itself an acceptance, thus making a contract. Court decisions are generally against this interpretation, and a great many companies take the additional precaution of stating, in their catalogs and on their business stationery, that all orders are subject to acceptance by the company. On the basis of the facts as outlined, and in the absence of other relevant circumstances that might modify the general situation, it would therefore seem that no contract existed in this case and no cancellation costs or penalties are involved.—Ed.

## UNFAMILIAR VERSES

Please send us a copy of the poem entitled, "Ode to a Purchasing Agent."  
J. S. Parks, Pur. Agt.  
The Atlantic Refining Co.  
Philadelphia, Pa.

● We regret that our files do not contain this literary gem, nor any

reference that enables us to locate it. Perhaps some one of our readers can supply it, so that we may pass it along to Mr. Parks, with due credit for the assist.—Ed.

## TESTIMONY FROM THE BOSS

At a recent meeting of the Milwaukee Association of Purchasing Agents, N.A.P.A. President H. W. Christensen quoted from a list of statements by leading business executives on the place of Purchasing in business. He referred to these as having been originally published in PURCHASING. May I have a copy?

J. M. Brophy, Pur. Agt.  
Blackhawk Mfg. Co.  
Milwaukee, Wis.

● For the past three years, as a feature of our annual "Purchase for Profit" issue, PURCHASING has been privileged to present the testimony of outstanding leaders of American industry as to the growing importance of purchasing in management plans and organization. Reprints of the current series (May 1952) entitled "Purchasing—Partner in Modern Management" are still available.—Ed.

## OLD IDEA; NEW APPLICATIONS

We note that the article in your October issue entitled "Traveling Requisition—Permanent Inventory Card System Adopted at Timken Plant" refers to a "new" card system. Possibly this system might be new to Timken, but it is practically identical to the system used at our titanium mine here at Tahawus and at our other plants throughout the country for many years. Our Kardex system uses a "stores record card" and a "stores purchase card" for each of the 15,000 items carried in our stores. (Samples attached.) When the supply of a stores item reaches an indicated minimum, the stores purchase card is sent to the purchasing department for re-ordering.

We cannot stress too strongly the importance of a stores Kardex system to our mining operation. Our mine, known as MacIntyre Development, is the major domestic source of titanium, and is located at a remote point in the Adirondacks, about 65 miles north of Glens Falls. For that reason it is absolutely essential, in order to assure uninterrupted continuity of our operation, that we have on hand at all times a sufficient quantity of parts and supplies to maintain the many items of shovels, trucks, conveyors, and other large equipment

necessary to a large mining and milling operation. We must insure against long deliveries, critical shortages, and all the attendant problems which beset all purchasing agents. The inventory system we are using has, to a large extent, been the answer to most foreseeable difficulties. Incidentally, our system is not only extraordinarily effective, but comparatively simple and economical to operate.

The stores purchase card gives the purchasing agent a complete history of the item and enables him at all times to keep a constant check on the minimum and maximum set on these cards, so that other department heads and management can immediately institute any changes which may be necessary. Great care is taken to prevent, as far as possible, the accumulation of large quantities of items that may become obsolete. Many items are rendered instantly obsolete with the sale or disposal of a large piece of equipment, and very often there is no market—or at least a very poor market—for these parts, even though they are new.

L. de Polac, Pur. Agt.  
National Lead Company  
Titanium Division  
Tahawus, N. Y.

● Reader de Polac's experience and commendation confirm the merits of a requisitioning system that is not new, but has been rather slow in gaining wide acceptance in purchasing. Our first description of the traveling requisition was published some 15 years ago. At that time, so far as we can learn, its use was largely confined to the larger public utility companies. More recently, it has been adopted in manufacturing concerns. An additional article in the December issue (p. 96) describes its successful recent application in a representative insurance company—appropriately, The Travelers.—Ed.

## HARDY PERENNIAL

If a reprint of the article "If I Were A Salesman" is still available, I would appreciate receiving a copy.

Lewis Reese  
Instrument Components, Inc.  
New Hyde Park, N. Y.

● The late Mr. Kerrick's classic, first published in our May 1946 issue, is still going strong. Reprint sent.—Ed.